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WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

SOLID AND HAZARDOUS WASTE DIVISION

HAZARDOUS WASTE MANAGEMENT

CHAPTER 12

STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES AND STANDARDS FOR THE MANAGEMENT OF USED OIL

2007

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Bold = State added language ^ = Federal Language deleted

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266/Subpart A Section 1. RESERVED

266/Subpart B Section 2. RESERVED

266/Subpart C Section 3. RECYCLABLE MATERIALS USED IN A MANNER CONSTITUTING DISPOSAL

266.20 (a) APPLICABILITY

266.20(a) (i) The regulations of this Section apply to recyclable materials that are applied to or placed on the land:

266.20(a)(1) (A) Without mixing with any other substance(s); or

266.20(a)(2) (B) After mixing or combination with any other substance(s). These materials will be referred to throughout this Section as "materials used in a manner that constitutes disposal."

266.20(b) (ii) Products produced for the general public's use that are used in a manner that constitutes disposal and that contain recyclable materials are not presently subject to regulation if the recyclable materials have undergone a chemical reaction in the course of producing the products so as to become inseparable by physical means and if such products meet the applicable treatment standards in Chapter 13, Section 4 of these rules and regulations (or applicable prohibition levels in Chapter 13, Section 3(c) of these rules and regulations and W.S. 35-11-503(d), where no treatment standards have been established) for each recyclable material (i.e., hazardous waste) that they contain. Commercial fertilizers that are produced for the general public's use that contain recyclable materials also are not presently subject to regulation provided they meet these same treatment standards or prohibition levels for each recyclable material that they contain. However, zinc-containing fertilizers using hazardous waste K061 that are produced for the general public's use are not presently subject to regulation.

266.20(c) (iii) Anti-skid/deicing uses of slags, which are generated from high temperature metals recovery (HTMR) processing of hazardous waste K061, K062, and F006, in a manner constituting disposal are not covered by the exemption in Section 3(a)(ii) of this ~~the~~ Chapter and remain subject to regulation.

266.21 (b) STANDARDS APPLICABLE TO GENERATORS AND TRANSPORTERS OF MATERIALS USED IN A MANNER THAT CONSTITUTE DISPOSAL Generators and transporters of materials that are used in a manner that constitutes disposal are subject to the applicable requirements of Chapters 8 and 9 of these rules and regulations, and the notification requirement under Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d).

266.22 (c) STANDARDS APPLICABLE TO STORERS OF MATERIALS THAT ARE TO BE USED IN A MANNER THAT CONSTITUTES DISPOSAL WHO ARE NOT THE ULTIMATE USERS Owners or operators of facilities that store recyclable materials that are to be used in a manner that constitutes disposal, but who are not the ultimate users of the materials, are regulated under all applicable provisions of Chapter 1, Sections 1(h)-1(j); Chapters 3 through 7; Chapter 10, Sections 1 through 11; and Chapter 11, Sections 1 through 13 of these rules and regulations of these rules and the notification requirement under Chapter 1, Section 1(h) and W.S. 35-11-503(d).

266.23 (d) STANDARDS APPLICABLE TO USERS OF MATERIALS THAT ARE USED IN A MANNER THAT CONSTITUTES DISPOSAL

266.23(a) (i) Owners or operators of facilities that use recyclable materials in a manner that constitutes disposal are regulated under all applicable provisions of Chapter 1, Sections 1(h)-1(j); Chapters 3 through 7; Chapter 10, Sections 1 through 13; Chapter 11, Sections 1 through 15; and Chapter 13 of these rules and regulations and the notification requirement under Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d). (These requirements do not apply to products which contain these recyclable materials under the provisions of Section 3(a)(ii) of this Chapter.)

266.23(b) (ii) The use of waste or used oil or other material, which is contaminated with dioxin or any other hazardous waste (other than a waste identified solely on the basis of ignitability), for dust suppression or road treatment is prohibited.

266/Subpart D Section 4. RESERVED

266/Subpart E Section 5. RESERVED

266/Subpart F Section 6. RECYCLABLE MATERIALS UTILIZED FOR PRECIOUS METAL RECOVERY

266.70 (a) APPLICABILITY AND REQUIREMENTS

266.70(a) (i) The regulations of Section 6 of this Chapter apply to recyclable materials that are reclaimed to recover economically significant amounts of gold, silver, platinum, palladium, iridium, osmium, rhodium, ruthenium, or any combination of these.

266.70(b) (ii) Persons who generate, transport, or store recyclable materials that are regulated under Section 6 of this Chapter are subject to the following requirements:

266.70(b)(1) (A) Notification requirements under Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d);

266.70(b)(2) (B) Chapter 8, Section 2 of these rules and regulations (for generators), Chapter 9, Sections 2(a) and 2(b) of these rules and regulations (for transporters), and Chapter 11, Sections 7(b) and 7(c) of these rules and regulations (for persons who store); and

266.70(b)(3) (C) For precious metal exported to or imported from designated OECD member countries for recovery, ~~Chapter 8, Section 8 of these rules and regulations~~ subpart H of 40 CFR part 262 (see Chapter 8, Section 1(a)(iv) of these rules and regulations) and Chapter 11, Section 4(c)(i)(B) of these rules and regulations. For precious metals exported to or imported from non-OECD countries for recovery, Chapter 8, Sections 5 and 6 of these rules and regulations.

266.70(c) (iii) Persons who store recycled materials that are regulated under this Section must keep the following records to document that they are not accumulating these materials speculatively (as defined in Chapter 1, Section 1(f)(i) of these rules and regulations;

266.70(c)(1) (A) Records showing the volume of these materials stored at the beginning of the calendar year;

266.70(c)(2) (B) The amount of these materials generated or received during the calendar year; and

266.70(c)(3) (C) The amount of materials remaining at the end of the calendar year.

266.70(d) (iv) Recyclable materials that are regulated under this Section that are accumulated speculatively (as defined in Chapter 1, Section 1(f)(i) of these rules and regulations) are subject to all applicable provisions of Chapter 1, Sections 1(h)-1(j); and Chapters 3 through 11 of these rules and regulations.

266/Subpart G Section 7. SPENT LEAD-ACID BATTERIES BEING RECLAIMED

266.80 (a) APPLICABILITY AND REQUIREMENTS

266.80(a) (i) ~~The regulations of Section 7 of this Chapter apply to persons who reclaim (including regeneration) spent lead-acid batteries that are recyclable materials ("spent batteries"). Persons who generate, transport, or collect spent batteries, who regenerate spent batteries, or who store spent batteries but do not reclaim them (other than spent batteries that are to be regenerated) are not subject to regulation under Chapter 1, Sections 1(h)-1(j); Chapter 3; Chapter 4; Chapter 5; Chapter 6; Chapter 7; Chapter 8; Chapter 9; Chapter 10; Chapter 11; or Chapter 12, Sections 1 through 8 of these rules and regulations, and also are not subject to the requirements of Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d).~~ Are spent lead-acid batteries exempt from hazardous waste management requirements? If you generate, collect, transport, store, or regenerate lead-acid batteries for reclamation purposes, you may be exempt from certain hazardous waste management requirements. Use the following table to determine which requirements apply to you. Alternatively, you may choose to manage your spent lead-acid batteries under the "Universal Waste" rule in Chapter 14 of these rules and regulations.

If Your Batteries ***	And If You ***	Then You ***	And You ***
(1) Will be reclaimed through regeneration (such as by electrolyte replacement).		are exempt from Chapter 8 of these rules and regulations (except Chapter 8, Section 1(b)), Chapters 3 through 7, 9 through 11, and 13, and Sections 1 through 8, 19 and 20 of this Chapter, and the notification requirements at Chapter 1, Section 1(h) of these rules and regulations, W.S. 35-11-503(d) and Section 3010 of RCRA.	are subject to Chapter 2 and Chapter 8, Section 1(b)of these rules and regulations.
(2) Will be reclaimed other than through regeneration.	generate, collect, and/or transport these batteries.	are exempt from Chapter 8 of these rules and regulations (except Chapter 8, Section 1(b)), Chapters 3 through 7, 9 through 11, and Sections 1 through 8, 19 and 20 of this Chapter, and the notification requirements at Chapter 1, Section 1(h) of these rules and regulations, W.S. 35-11-503(d) and Section 3010 of RCRA.	are subject to Chapter 2 and Chapter 8, Section 1(b), and applicable provisions under Chapter 13 of these rules and regulations.
(3) Will be reclaimed other than through regeneration.	store these batteries but you aren't the reclaimer.	are exempt from Chapter 8 of these rules and regulations (except Chapter 8, Section 1(b)), Chapters 3 through 7, 9 through 11, and Sections 1 through 8, 19 and 20 of this Chapter, and the notification requirements at Chapter 1, Section 1(h) of these rules and regulations, W.S. 35-11-503(d) and Section 3010 of RCRA.	are subject to Chapter 2 and Chapter 8, Section 1(b, and applicable provisions under Chapter 13 of these rules and regulations.

(4) Will be reclaimed other than through regeneration.	store these batteries before you reclaim them.	must comply with Section 7(a)(ii) of this Chapter and as appropriate other regulatory provisions described in Section 7(a)(ii) of this Chapter.	are subject to Chapter 2 and Chapter 8, Section 1(b), and applicable provisions under Chapter 13 of these rules and regulations.
(5) Will be reclaimed other than through regeneration.	don’t store these batteries before you reclaim them.	are exempt from Chapter 8 of these rules and regulations (except Chapter 8, Section 1(b)), Chapters 3 through 7, 9 through 11, and Sections 1 through 8, 19 and 20 of this Chapter, and the notification requirements at Chapter 1, Section 1(h) of these rules and regulations, W.S. 35-11-503(d) and Section 3010 of RCRA.	are subject to Chapter 2 and Chapter 8, Section 1(b), and applicable provisions under Chapter 13 of these rules and regulations.

266.80(b) (ii) ~~Owners or operators of facilities that store spent lead acid batteries before reclaiming (other than spent batteries that are to be regenerated) them are subject to the following requirements.~~ If I store spent lead-acid batteries before I reclaim them but not through regeneration, which requirements apply? The requirements of Section 7(a)(ii) of this Chapter apply to you if you store spent lead-acid batteries before you reclaim them, but you don't reclaim them through regeneration. The requirements are slightly different depending on your hazardous waste management permit status.

266.80(b)(1) (A) ~~Notification requirements under Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d);~~ For Interim Status Facilities, you must comply with:

. . . (i) (I) Notification requirements under Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d)and Section 3010 of RCRA.

. . . (i) (II) All applicable provisions in Chapter 11, Section 1 of these rules and regulations.

. . . (iii) (III) All applicable provisions in Chapter 11, Section 4 of these rules and regulations except Chapter 11, Section 4(d) (waste analysis).

. . . (iv) (IV) All applicable provisions in Chapter 11, Sections 5 and 6 of these rules and regulations.

. . . (v) (V) All applicable provisions in Chapter 11, Section 7 of these rules and regulations except Section 7(b)&(c) (dealing with the use of the manifest and manifest discrepancies).

. . . (vi) (VI) All applicable provisions in Chapter 11, Sections 8 through 13 and Chapter 5 of these rules and regulations.

. . . (vii) (VII) All applicable provisions in Chapters 1, Section 1(h)through (j), 3, 4, 6, 7 and Chapter 11, Section 2 of these rules and regulations.

266.80(b)(2) (B) ~~All applicable provisions in Chapter 10, Sections 1 and 2 of these rules and regulations (but not Chapter 10, Section 2(d) (waste analysis)), Chapter 10, Sections 3, 4, and 5 (but not Chapter 10, Sections 5(b) or 5(c) (dealing with the use of the manifest and manifest discrepancies)), and Chapter 10, Sections 6 through 11 and Chapter 5 of these rules and regulations;~~ For Permitted Facilities:

. . . (i) (I) Notification requirements under Chapter 1, Section 1(h) of these rules and regulations, W.S. 35-11-503(d) and Section 3010 of RCRA.

. . . (ii) (II) All applicable provisions in Chapter 10, Section 1 of these rules and regulations.

. . . (iii) (III) All applicable provisions in Chapter 10, Section 2 of these rules and regulations (but not Chapter 10, Section 2(d) (waste analysis).

. . . (iv) (IV) All applicable provisions in Chapter 10, Sections 3 and 4 of these rules and regulations.

. . . (v) (V) All applicable provisions in Chapter 10, Section 5 of these rules and regulations (but not Chapter 10, Section 5(b) & (c) (dealing with the use of the manifest and manifest discrepancies).

. . . (vi) (VI) All applicable provisions in Chapter 5 and Chapter 10, Sections 6 through 11 of these rules and regulations.

. . . (vii) (VII) All applicable provisions in Chapters 1, Section 1(h) through (j), 3, 4, 6, 7 and Chapter 11, Section 2 of these rules and regulations.

~~266.80(b)(3)~~ ~~(C) All applicable provisions in Chapter 11, Sections 1 and 4 of of these rules and regulations (but not Chapter 11, Section 4(d) (waste analysis), Chapter 11, Sections 5, 6, and 7 (but not Chapter 11, Sections 7(b) and 7(c) (dealing with use of the manifest and manifest discrepancies)), and Chapter 5 and Chapter 11, Sections 8 through 13 of these rules and regulations;~~

~~266.80(b)(4)~~ ~~(D) All applicable provisions in Chapter 1, Sections 1(h)-1(j); Chapter 3; Chapter 4; Chapter 6; Chapter 7; and Chapter 11, Section 2 of these rules and regulations.~~

266/Subpart H Section 8. HAZARDOUS WASTE BURNED IN BOILERS AND INDUSTRIAL FURNACES

266.100 (a) APPLICABILITY

266.100(a) (i) The regulations of Section 8 of this Chapter apply to hazardous waste burned or processed in a boiler or industrial furnace (as defined in Chapter 1, Section 1(f)(i) of these rules and regulations) irrespective of the purpose of burning or processing, except as provided by Sections 8(a)(ii), 8(a)(iii), 8(a)(iv), and 8(a)(vi) of this Chapter. In this Section, the term "burn" means burning for energy recovery or destruction, or processing for materials recovery or as an ingredient. The emissions standards of Sections 8(e), 8(f), 8(g), and 8(h) of this Chapter apply to facilities operating under ^ a State of Wyoming hazardous waste management facility permit as specified in Section 8(c) of this Chapter^.

266.100(b) (ii) The following hazardous wastes and facilities are not subject to regulation under this Section:

266.100(b)(1) (A) Used oil burned for energy recovery that is also a hazardous waste solely because it exhibits a characteristic of hazardous waste identified in Chapter 2, Section 3 of these rules and regulations. Such used oil is subject to regulation under Sections 9 through 17 of this Chapter;

266.100(b)(2) (B) Gas recovered from hazardous or solid waste landfills when such gas is burned for energy recovery;

266.100(b)(3) (C) Hazardous wastes that are exempt from regulation under Chapter 2, Section 1(d) and Chapter 2, Sections 1(f)(i)(C)(~~IV~~III) ~~through~~ and (~~VI~~IV) of these rules and regulations and hazardous wastes that are subject to the special requirements for conditionally exempt small quantity generators under Chapter 2, Section 1(e) of these rules and regulations; and

266.100(b)(4) (D) Coke ovens, if the only hazardous waste burned is EPA Hazardous Waste No. K087, decanter tank tar sludge from coking operations.

266.100(c) (iii) Owners and operators of smelting, melting, and refining furnaces (including pyrometallurgical devices such as cupolas, sintering machines, roasters, and foundry furnaces, but not including cement kilns, aggregate kilns, or halogen acid furnaces burning hazardous waste) that process hazardous waste solely for metal recovery are conditionally exempt from regulation under Section 8 of this Chapter, except for Sections 8(b) and 8(m) of this Chapter.

266.100(c)(1) (A) To be exempt from Sections 8(c) through 8(l) of this Chapter, an owner or operator of a metal recovery furnace or mercury recovery furnace must comply with the following requirements, except that an owner or operator of a lead or a nickel-chromium recovery furnace, or a metal recovery furnace that burns baghouse bags used to capture metallic dusts emitted by steel manufacturing, must comply with the requirements of Section 8(a)(iii)(C) of this Chapter:

...(i) (I) Provide a one-time written notice to the Director indicating the following:

...(i)(A) (1.) The owner or operator claims exemption under Section 8(a)(iii) of this Chapter;

...(i)(B) (2.) The hazardous waste is burned solely for metal recovery consistent with the provisions of Section 8(a)(iii)(B) of this Chapter;

...(i)(C) (3.) The hazardous waste contains recoverable levels of metals; and

...(i)(D) (4.) The owner or operator will comply with the sampling and analysis and recordkeeping requirements of Section 8(a)(iii) of this Chapter;

...(ii) (II) Sample and analyze the hazardous waste and other feedstocks as necessary to comply with the requirements of Section 8(a)(iii) of this Chapter under procedures specified by Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, incorporated by reference in Chapter 1, Section 1(g)(i)(L) of these rules and regulations or alternative methods that meet or exceed the SW-846 method performance capabilities. If SW-846 does not prescribe a method for a particular determination, the owner or operator shall use the best available method; and

...(iii) (III) Maintain at the facility for at least three years records to document compliance with the provisions of Section 8(a)(iii) of this Chapter including limits on levels of toxic organic constituents and Btu value of the waste, and levels of recoverable metals in the hazardous waste compared to normal nonhazardous waste feedstocks.

266.100(c)(2) (B) A hazardous waste meeting either of the following criteria is not processed solely for metal recovery:

...(i) (I) The hazardous waste has a total concentration of organic compounds listed in Chapter 2, Appendix H, of these rules and regulations exceeding 500 ppm by weight, as-fired, and so is considered to be burned for destruction. The concentration of organic compounds in a waste as-generated may be reduced to the 500 ppm limit by bona fide treatment that removes or destroys organic constituents. Blending for dilution to meet the 500 ppm limit is prohibited and documentation that the waste has not been impermissibly diluted must be retained in the records required by Section 8(a)(iii)(A)(III) of this Chapter; or

...(ii) (II) The hazardous waste has a heating value of 5,000 Btu/lb or more, as-fired, and so is considered to be burned as fuel. The heating value of a waste as-generated may be reduced to below the 5,000 Btu/lb limit by bona fide treatment that removes or destroys organic constituents. Blending for dilution to meet the 5,000 Btu/lb limit is prohibited and documentation that the waste has not been impermissibly diluted must be retained in the records required by Section 8(a)(iii)(A)(III) of this Chapter.

266.100(c)(3) (C) To be exempt from Sections 8(c) through Section 8(l) of this Chapter, an owner or operator of a lead or nickel-chromium or mercury recovery furnace, or a metal recovery furnace that burns baghouse bags used to capture metallic dusts emitted by steel manufacturing, must provide a one-time written notice to the Director identifying each hazardous waste burned and specifying whether the owner or operator claims an exemption for each waste under Section 8(a)(iii)(C) of this Chapter or Section 8(a)(iii)(A) of this Chapter. The owner or operator must comply with the requirements of Section 8(a)(iii)(A) of this Chapter for those wastes claimed to be exempt under that Section and must comply with the requirements below for those wastes claimed to be exempt under Section 8(a)(iii)(C) of this Chapter.

...(i) (I) The hazardous wastes listed in Appendices J, K, and L of this Chapter, and baghouse bags used to capture metallic dusts emitted by steel manufacturing are exempt from the requirements of Section 8(a)(iii)(A) of this Chapter, provided that:

...(i)(A) (1.) A waste listed in Appendix J of this Chapter must contain recoverable levels of lead, a waste listed in Appendix K of this Chapter must contain recoverable levels of nickel or chromium, a waste listed in Appendix L must contain recoverable levels of mercury and contain less than 500 ppm of Chapter 2, Appendix H of these rules and regulations organic constituents, and baghouse bags used to capture metallic dusts emitted by steel manufacturing must contain recoverable levels of metal; and

...(i)(B) (2.) The waste does not exhibit the Toxicity Characteristic of Chapter 2, Section 3(e) of these rules and regulations for an organic constituent; and

...(i)(C) (3.) The waste is not a hazardous waste listed in Chapter 2, Section 4 of these rules and regulations because it is listed for an organic constituent as identified in Chapter 2, Appendix G of these rules and regulations; and

...(i)(D) (4.) The owner or operator certifies in the one-time notice that hazardous waste is burned under the provisions of Section 8(a)(iii)(C) of this Chapter and that sampling and analysis will be conducted or other information will be obtained as necessary to ensure continued compliance with these requirements. Sampling and analysis shall be conducted according to Section 8(a)(iii)(A)(II) of this Chapter and records to document compliance with Section 8(a)(iii)(C) of this Chapter shall be kept for at least three years.

...(ii) (II) The Director may decide on a case-by-case basis that the toxic organic constituents in a material listed in Appendix J, K, or L of this Chapter that contains a total concentration of more than 500 ppm toxic organic compounds listed in Chapter 2, Appendix H of these rules and regulations, may pose a hazard to human health and the environment when burned in a metal recovery furnace exempt from the requirements of this Section. In that situation, after adequate notice and opportunity for comment, the metal recovery furnace will become subject to the requirements of Section 8 of this Chapter when burning that material. In making the hazard determination, the Director will consider the following factors:

...(ii)(A) (1.) The concentration and toxicity of organic constituents in the material; and

...(ii)(B) (2.) The level of destruction of toxic organic constituents provided by the furnace; and

...(ii)(C) (3.) Whether the acceptable ambient levels established in Appendices D or E of this Chapter may be exceeded for any toxic organic compound that may be emitted based on dispersion modeling to predict the maximum annual average off-site ground level concentration.

266.100(d) (iv) The standards for direct transfer operations under Section 8(l) of this Chapter apply only to facilities subject to the permit standards of Section 8(c) of this Chapter.

266.100(e) (v) The management standards for residues under Section 8(m) of this Chapter apply to any boiler or industrial furnace burning hazardous waste.

266.100(f) (vi) Owners and operators of smelting, melting, and refining furnaces (including pyrometallurgical devices such as cupolas, sintering machines, roasters, and foundry furnaces) that process hazardous waste for recovery of economically significant amounts of the precious metals gold, silver, platinum, palladium, iridium, osmium, rhodium, or ruthenium, or any combination of these are conditionally exempt from regulation under Section 8 of this Chapter, except for Section 8(m) of this Chapter. To be exempt from Sections 8(b) through 8(l) of this Chapter, an owner or operator must:

266.100(f)(1) (A) Provide a one-time written notice to the Director indicating the following:

...(i) (I) The owner or operator claims exemption under Section 8(a)(vi) of this Chapter;

...(ii) (II) The hazardous waste is burned for legitimate recovery of precious metal; and

...(iii) (III) The owner or operator will comply with the sampling and analysis and recordkeeping requirements of Section 8(a)(vi) of this Chapter; and

266.100(f)(2) (B) Sample and analyze the hazardous waste as necessary to document that the waste is burned for recovery of economically significant amounts of precious metal using procedures specified by Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, incorporated by reference in Chapter 1, Section 1(g)(i)(L) of these rules and regulations or alternative methods that meet or exceed the SW-846 method performance capabilities. If SW-846 does not prescribe a method for a particular determination, the owner or operator shall use the best available method; and

266.100(f)(3) (C) Maintain at the facility for at least three years records to document that all hazardous wastes burned are burned for recovery of economically significant amounts of precious metal.

266.101 (b) MANAGEMENT PRIOR TO BURNING

266.101(a) (i) Generators. Generators of hazardous waste that is burned in a boiler or industrial furnace are subject to Chapter 8 of these rules and regulations.

266.101(b) (ii) Transporters. Transporters of hazardous waste that is burned in a boiler or industrial furnace are subject to Chapter 9 of these rules and regulations.

266.101(c) (iii) Storage facilities.

266.101(c)(1) (A) Owners and operators of facilities that store hazardous waste that is burned in a boiler or industrial furnace are subject to the applicable provisions of Chapter 1, Sections 1(h)-1(j); Chapter 3, Section 2; Chapter 4; Chapter 5; Chapter 6, Section 2; Chapter 7; Chapter 10; and Chapter 11 of these rules and regulations, except as provided by Section 8(b)(iii)(B) of this Chapter. These standards apply to storage by the burner as well as to storage facilities operated by intermediaries (processors, blenders, distributors, etc.) between the generator and the burner.

266.101(c)(2) (B) Owners and operators of facilities that burn, in an onsite boiler or industrial furnace exempt from regulation under the small quantity burner provisions of Section 8(i) of this Chapter, hazardous waste that they generate are exempt from the regulations of Chapter 1, Sections 1(h)-1(j); Chapter 3, Section 2; Chapter 4; Chapter 5; Chapter 6, Section 2; Chapter 7; Chapter 10; and Chapter 11 of these rules and regulations, with respect to the storage of mixtures of hazardous waste and the primary fuel to the boiler or industrial furnace in tanks that feed the fuel mixture directly to the burner. Storage of hazardous waste prior to mixing with the primary fuel is subject to regulation as prescribed in Section 8(b)(iii)(A) of this Chapter.

266.102 (c) PERMIT STANDARDS FOR BURNERS

266.102(a) (i) Applicability

266.102(a)(1) (A) General. Owners and operators of boilers and industrial furnaces burning hazardous waste ^ must comply with the requirements of Section 8(c) of this Chapter and Chapter 3, Section 2(m) and Chapter 7, Section 1(g) of these rules and regulations, unless exempt under the small quantity burner exemption of Section 8(i) of this Chapter.

266.102(a)(2) (B) Applicability of standards of Chapter 5 and Chapter 10 of these rules and regulations. Owners and operators of boilers and industrial furnaces that burn hazardous waste are subject to the following provisions of Chapter 5 and Chapter 10 of these rules and regulations, except as provided otherwise by this Section:

...(i) (I) In Chapter 10, Section 1 (General), Chapter 10, Section 1(d);

...(ii) (II) In Chapter 10, Section 2 (General facility standards), Chapter 10, Sections 2(b) through 2(i);

...(iii) (III) In Chapter 10, Section 3 (Preparedness and prevention), Chapter 10, Sections 3(b) through 3(h);

...(iv) (IV) In Chapter 10, Section 4 (Contingency plan and emergency procedures), Chapter 10, Sections 4(b) through 4(g);

...(v) (V) In Chapter 10, Section 5 (Manifest system, recordkeeping, and reporting), the applicable provisions of Chapter 10, Sections 5(b) through 5(h);

...(vi) (VI) In Chapter 10, Section 6 (Releases from Waste Material Management Units), Chapter 10, Sections 6(a) and 6(l);

...(vii) (VII) In Chapter 10, Section 7 (Closure and post-closure) Chapter 10, Sections 7(b) through 7(f);

...(viii) (VIII)In Chapter 5 (Financial requirements), Chapter 10, Sections 1(b), (c), (d), and (h) through (l) of these rules and regulations, except that the State of Wyoming and the Federal government are exempt from the requirements of Chapter 5 of these rules and regulations; and

...(ix) (IX) Chapter 10, Section 27 (Air emission standards for equipment leaks), except Chapter 10, Section 27(a)(i) of these rules and regulations.

266.102(b) (ii) Hazardous waste analysis

266.102(b)(1) (A) The owner or operator must provide an analysis of the hazardous waste that quantifies the concentration of any constituent identified in Chapter 2, Appendix H of these rules and regulations that may reasonably be expected to be in the waste. Such constituents must be identified and quantified if present, at levels detectable by analytical procedures prescribed by Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (incorporated by reference, see Chapter 1, Section 1(g)(i)(L) of these rules and regulations). Alternative methods that meet or exceed the method performance capabilities of SW-846 methods may be used. If SW-846 does not prescribe a method for a particular determination, the owner or operator shall use the best available method. The Chapter 2, Appendix H constituents excluded from this analysis must be identified and the basis for their exclusion explained. This analysis will be used to provide all information required by this Section and Chapter 3, Section 2(m) and Chapter 7, Section 1(g) of these rules and regulations and to enable the permit writer to prescribe such permit conditions as necessary to protect human health and the environment. Such analysis must be included as a portion of the part B permit application^, as well as any other analysis required by the permit authority in preparing the permit. Owners and operators of boilers and industrial furnaces^ must provide the information required by Chapter 3, Section 2(m) or Chapter 7, Section 1(g)(iii) of these rules and regulations in the part B application to the greatest extent possible.

266.102(b)(2) (B) Throughout normal operation, the owner or operator must conduct sampling and analysis as necessary to ensure that the hazardous waste, other fuels, and industrial furnace feedstocks fired into the boiler or industrial furnace are within the physical and chemical composition limits specified in the permit.

266.102(c) (iii) Emissions standards. Owners and operators must comply with emissions standards provided by Sections 8(e) through 8(h) of this Chapter.

266.102(d) (iv) Permits

266.102(d)(1) (A) The owner or operator may burn only hazardous wastes specified in the facility permit and only under the operating conditions specified under Section 8(c)(v) of this Chapter, except in approved trial burns under the conditions specified in Chapter 7, Section 1(g) of these rules and regulations.

266.102(d)(2) (B) Hazardous wastes not specified in the permit may not be burned until operating conditions have been specified under a new permit or permit modification, as applicable. Operating requirements for new wastes may be based on either trial burn results or alternative data included with part B of a permit application under Chapter 3, Section 2(m) of these rules and regulations.

266.102(d)(3) (C) **Reserved^.**

266.102(d)(4) (D) A permit for a new boiler or industrial furnace^ must establish appropriate conditions for each of the applicable requirements of Section 8(c) of this Chapter, including but not limited to allowable hazardous waste firing rates and operating conditions necessary to meet the requirements of Section 8(c)(v) of this Chapter, in order to comply with the following standards:

...(i) (I) For the period beginning with initial introduction of hazardous waste and ending with initiation of the trial burn, and only for the minimum time required to bring the device to a point of operational readiness to conduct a trial burn, not to exceed a duration of 720 hours operating time when burning hazardous waste, the operating requirements must be those most likely to ensure compliance with the emission standards of Sections 8(e) through 8(h) of this Chapter, based on the Director's engineering judgment. If the applicant is seeking a waiver from a trial burn to demonstrate conformance with a particular emission standard, the operating requirements during this initial period of operation shall include those specified by the applicable provisions of Section 8(e), 8(f), 8(g), or 8(h) of this Chapter. The Director may extend the duration of this period for up to 720 additional hours when good cause for the extension is demonstrated by the applicant.

...(ii) (II) For the duration of the trial burn, the operating requirements must be sufficient to demonstrate compliance with the emissions standards of Sections 8(e) through 8(h) of this Chapter and must be in accordance with the approved trial burn plan;

...(iii) (III) For the period immediately following completion of the trial burn, and only for the minimum period sufficient to allow sample analysis, data computation, submission of the trial burn results by the applicant, review of the trial burn results and modification of the facility permit by the Director to reflect the trial burn results, the operating requirements must be those most likely to ensure compliance with the emission standards of Sections 8(e) through 8(h) of this Chapter based on the Director's engineering judgment.

...(iv) (IV) For the remaining duration of the permit, the operating requirements must be those demonstrated in a trial burn or by alternative data specified in Chapter 3, Section 2(m) of these rules and regulations, as sufficient to ensure compliance with the emissions standards of Sections 8(e) through 8(h) of this Chapter.

266.102(e) (v) Operating requirements

266.102(e)(1) (A) General. A boiler or industrial furnace burning hazardous waste must be operated in accordance with the operating requirements specified in the permit at all times where there is hazardous waste in the unit.

266.102(e)(2) (B) Requirements to ensure compliance with the organic emissions standards.

...(i) (I) DRE standard. Operating conditions will be specified either on a case-by-case basis for each hazardous waste burned as those demonstrated (in a trial burn or by alternative data as specified in Chapter 3, Section 2(m) of these rules and regulations to be sufficient to comply with the destruction and removal efficiency (DRE) performance standard of Section 8(e)(i) of this Chapter or as those special operating requirements provided by Section 8(e)(i)(D) of this Chapter for the waiver of the DRE trial burn. When the DRE trial burn is not waived under Section 8(e)(i)(D) of this Chapter, each set of operating requirements will specify the composition of the hazardous waste (including acceptable variations in the physical and chemical properties of the hazardous waste which will not affect compliance with the DRE performance standard) to which the operating requirements apply. For each such hazardous waste, the permit will specify acceptable operating limits including, but not limited to, the following conditions as appropriate:

...(i)(A) (1.) Feed rate of hazardous waste and other fuels measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(2)(i)(B) (2.) Minimum and maximum device production rate when producing normal product expressed in appropriate units, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(i)(C) (3.) Appropriate controls of the hazardous waste firing system;

...(i)(D) (4.) Allowable variation in boiler and industrial furnace system design or operating procedures;

...(i)(E) (5.) Minimum combustion gas temperature measured at a location indicative of combustion chamber temperature, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(i)(F) (6.) An appropriate indicator of combustion gas velocity, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter, unless documentation is provided under Chapter 7, Section 1(g) of these rules and regulations demonstrating adequate combustion gas residence time; and

...(i)(G) (7.) Such other operating requirements as are necessary to ensure that the DRE performance standard of Section 8(e)(i) of this Chapter is met.

...(ii) (II) Carbon monoxide and hydrocarbon standards. The permit must incorporate a carbon monoxide (CO) limit and, as appropriate, a hydrocarbon (HC) limit as provided by Sections 8(e)(ii), 8(e)(iii), 8(e)(iv), 8(e)(v), and 8(e)(vi) of this Chapter. The permit limits will be specified as follows:

...(ii)(A) (1.) When complying with the CO standard of Section 8(e)(ii)(A) of this Chapter, the permit limit is 100 ppmv;

...(ii)(B) (2.) When complying with the alternative CO standard under Section 8(e)(iii) of this Chapter, the permit limit for CO is based on the trial burn and is established as the average over all valid runs of the highest hourly rolling average CO level of each run, and the permit limit for HC is 20 ppmv (as defined in Section 8(e)(iii)(A) of this Chapter), except as provided in Section 8(e)(vi) of this Chapter.

...(ii)(C) (3.) When complying with the alternative HC limit for industrial furnaces under Section 8(e)(vi) of this Chapter, the permit limit for HC and CO is the baseline level when hazardous waste is not burned as specified by Section 8(e)(vi) of this Chapter.

...(iii) (III) Start-up and shut-down. During start-up and shut-down of the boiler or industrial furnace, hazardous waste (except waste fed solely as an ingredient under the Tier I (or adjusted Tier I) feed rate screening limits for metals and chloride/chlorine, and except low risk waste exempt from the trial burn requirements under Sections 8(e)(i)(E), 8(f), 8(g), and 8(h) of this Chapter) must not be fed into the device unless the device is operating within the conditions of operation specified in the permit.

266.102(e)(3) (C) Requirements to ensure conformance with the particulate standard.

...(i) (I) Except as provided in Sections 8(c)(v)(C)(II) and 8(c)(v)(C)(III) of this Chapter, the permit shall specify the following operating requirements to ensure conformance with the particulate standard specified in Section 8(f) of this Chapter:

...(i)(A) (1.) Total ash feed rate to the device from hazardous waste, other fuels, and industrial furnace feedstocks, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(i)(B) (2. Maximum device production rate when producing normal product expressed in appropriate units, and measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(i)(C) (3.) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

...(i)(D) (4.) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

...(i)(E) (5.) Such other operating requirements as are necessary to ensure that the particulate standard in Section 8(f)(i) of this Chapter is met.

...(ii) (II) Permit conditions to ensure conformance with the particulate matter standard shall not be provided for facilities exempt from the particulate matter standard under Section 8(f)(ii) of this Chapter;

...(iii) (III) For cement kilns and light-weight aggregate kilns, permit conditions to ensure compliance with the particulate standard shall not limit the ash content of hazardous waste or other feed materials.

266.102(e)(4) (D) Requirements to ensure conformance with the metals emissions standard.

...(i) (I) For conformance with the Tier I (or adjusted Tier I) metals feed rate screening limits of Section 8(g)(ii) or 8(g)(v) of this Chapter, the permit shall specify the following operating requirements:

...(i)(A) (1.) Total feed rate of each metal in hazardous waste, other fuels, and industrial furnace feedstocks measured and specified under provisions of Section 8(c)(v)(F) of this Chapter;

...(i)(B) (2.) Total feed rate of hazardous waste measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(i)(C) (3.) A Sampling and metals analysis program for the hazardous waste, other fuels, and industrial furnace feedstocks;

...(ii) (II) For conformance with the Tier II metals emission rate screening limits under Section 8(g)(iii) of this Chapter and the Tier III metals controls under Section 8(g)(iv) of this Chapter, the permit shall specify the following operating requirements:

...(ii)(A) (1.) Maximum emission rate for each metal specified as the average emission rate during the trial burn;

...(ii)(B) (2.) Feed rate of total hazardous waste and pumpable hazardous waste, each measured and specified as prescribed in Section 8(c)(v)(F)(I) of this Chapter;

...(ii)(C) (3.) Feed rate of each metal in the following feedstreams, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter:

...(ii)(C)(1) a. Total feed streams;

...(ii)(C)(2) b. Total hazardous waste feed; and

...(ii)(C)(3) c. Total pumpable hazardous waste feed;

...(ii)(D) (4.) Total feed rate of chlorine and chloride in total feed streams measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(ii)(E) (5.) Maximum combustion gas temperature measured at a location indicative of combustion chamber temperature, and measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(ii)(F) (6.) Maximum flue gas temperature at the inlet to the particulate matter air pollution control system measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(ii)(G) (7.) Maximum device production rate when producing normal product expressed in appropriate units and measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(ii)(H) (8.) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

...(ii)(I) (9.) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

...(ii)(J) (10.) Such other operating requirements as are necessary to ensure that the metals standards under Section 8(g)(iii) or 8(g)(iv) of this Chapter are met.

...(iii) (III) For conformance with an alternative implementation approach approved by the Director under Section 8(g)(vi) of this Chapter, the permit will specify the following operating requirements:

...(iii)(A) (1.) Maximum emission rate for each metal specified as the average emission rate during the trial burn;

...(iii)(B) (2.) Feed rate of total hazardous waste and pumpable hazardous waste, each measured and specified as prescribed in Section 8(c)(v)(F)(I) of this Chapter;

...(iii)(C) (3.) Feed rate of each metal in the following feedstreams, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter:

...(iii)(C)(1) a. Total hazardous waste feed; and

...(iii)(C)(2) b. Total pumpable hazardous waste feed;

...(iii)(D) (4.) Total feed rate of chlorine and chloride in total feedstreams measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(iii)(E) (5.) Maximum combustion gas temperature measured at a location indicative of combustion chamber temperature, and measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(iii)(F) (6.) Maximum flue gas temperature at the inlet to the particulate matter air pollution control system measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(iii)(G) (7.) Maximum device production rate when producing normal product expressed in appropriate units and measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(iii)(H) (8.) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

...(iii)(I) (9.) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

...(iii)(J) (10.) Such other operating requirements as are necessary to ensure that the metals standards under Section 8(g)(iii) or 8(g)(iv) of this Chapter are met.

266.102(e)(5) (E) Requirements to ensure conformance with the hydrogen chloride and chlorine gas standards.

...(i) (I) For conformance with the Tier I total chloride and chlorine feed rate screening limits of Section 8(h)(ii)(A) of this Chapter, the permit will specify the following operating requirements:

...(i)(A) (1.) Feed rate of total chloride and chlorine in hazardous waste, other fuels, and industrial furnace feedstocks measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(i)(B) (2.) Feed rate of total hazardous waste measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(i)(C) (3.) A sampling and analysis program for total chloride and chlorine for the hazardous waste, other fuels, and industrial furnace feedstocks;

...(ii) (II) For conformance with the Tier II HCl and Cl_2 emission rate screening limits under Section 8(h)(ii)(B) of this Chapter and the Tier III HCl and Cl_2 controls under Section 8(h)(iii) of this Chapter, the permit will specify the following operating requirements:

...(ii)(A) (1.) Maximum emission rate for HCl and for Cl_2 specified as the average emission rate during the trial burn;

...(ii)(B) (2.) Feed rate of total hazardous waste measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(ii)(B) (3.) Total feed rate of chlorine and chloride in total feedstreams, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(ii)(D) (4.) Maximum device production rate when producing normal product expressed in appropriate units, measured and specified as prescribed in Section 8(c)(v)(F) of this Chapter;

...(ii)(E) (5.) Appropriate controls on operation and maintenance of the hazardous waste firing system and any air pollution control system;

...(ii)(F) (6.) Allowable variation in boiler and industrial furnace system design including any air pollution control system or operating procedures; and

...(ii)(G) (7.) Such other operating requirements as are necessary to ensure that the HCl and Cl_2 standards under Section 8(h)(ii)(B) or 8(h)(iii) of this Chapter are met.

266.102(e)(6) (F) Measuring parameters and establishing limits based on trial burn data.

...(i) (I) General requirements. As specified in Sections 8(c)(v)(B) through 8(c)(v)(E) of this Chapter , each operating parameter shall be measured, and permit limits on the parameter shall be established, according to either of the following procedures:

...(i)(A) (1.) Instantaneous limits. A parameter may be measured and recorded on an instantaneous basis (i.e., the value that occurs at any time) and the permit limit specified as the time-weighted average during all valid runs of the trial burn; or

...(i)(B) (2.) Hourly rolling average.

...(i)(B)(1) a. The limit for a parameter may be established and continuously monitored on an hourly rolling average basis defined as follows:

...(i)(B)(1)(i) i. A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

...(i)(B)(1)(ii) ii. An hourly rolling average is the arithmetic mean of the 60 most recent 1-minute average values recorded by the continuous monitoring system.

...(i)(B)(2) b. The permit limit for the parameter shall be established based on trial burn data as the average over all valid test runs of the highest hourly rolling average value for each run.

...(ii) (II) Rolling average limits for carcinogenic metals and lead. Feed rate limits for the carcinogenic metals (i.e., arsenic, beryllium, cadmium and chromium) and lead may be established either on an hourly rolling average basis as prescribed by Section 8(c)(v)(F)(I) of this Chapter or on (up to) a 24 hour rolling average basis. If the owner or operator elects to use an average period from 2 to 24 hours:

...(ii)(A) (1.) The feed rate of each metal shall be limited at any time to ten times the feed rate that would be allowed on an hourly rolling average basis;

...(ii)(B) (2.) The continuous monitor shall meet the following specifications:

...(ii)(B)(1) a. A continuous monitor is one which continuously samples the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds.

...(ii)(B)(2) b. The rolling average for the selected averaging period is defined as the arithmetic mean of one hour block averages for the averaging period. A one hour block average is the arithmetic mean of the one minute averages recorded during the 60-minute period beginning at one minute after the beginning of preceding clock hour; and

...(ii)(C) (3.) The permit limit for the feed rate of each metal shall be established based on trial burn data as the average over all valid test runs of the highest hourly rolling average feed rate for each run.

...(iii) (III) Feed rate limits for metals, total chloride and chlorine, and ash. Feed rate limits for metals, total chlorine and chloride, and ash are established and monitored by knowing the concentration of the substance (i.e., metals, chloride/chlorine, and ash) in each feedstream and the flow rate of the feedstream. To monitor the feed rate of these substances, the flow rate of each feedstream must be monitored under the continuous monitoring requirements of Sections 8(c)(v)(F)(I) and 8(c)(v)(F)(II) of this Chapter.

...(iv) (IV) Conduct of trial burn testing.

...(iv)(A) (1.) If compliance with all applicable emissions standards of Sections 8(e) through 8(h) of this Chapter is not demonstrated simultaneously during a set of test runs, the operating conditions of additional test runs required to demonstrate compliance with remaining emissions standards must be as close as possible to the original operating conditions.

...(ii)(B) (2.) Prior to obtaining test data for purposes of demonstrating compliance with the emissions standards of Sections 8(e) through 8(h) of this Chapter or establishing limits on operating parameters under Section 8(c) of this Chapter, the facility must operate under trial burn conditions for a sufficient period to reach steady-state operations. The Director may determine, however, that industrial furnaces that recycle collected particulate matter back into the furnace and that comply with an alternative implementation approach for metals under Section 8(g)(vi) of this Chapter need not reach steady state conditions with respect to the flow of metals in the system prior to beginning compliance testing for metals emissions.

...(ii)(C) (3.) Trial burn data on the level of an operating parameter for which a limit must be established in the permit must be obtained during emissions sampling for the pollutant(s) (i.e., metals, PM, HCl/Cl_2, organic compounds) for which the parameter must be established as specified by Section 8(c)(v) of this Chapter.

266.102(e)(7) (G) General requirements

...(i) (I) Fugitive emissions. Fugitive emissions must be controlled by:

...(i)(A) (1.) Keeping the combustion zone totally sealed against fugitive emissions; or

...(i)(B) (2.) Maintaining the combustion zone pressure lower than atmospheric pressure; or

...(i)(C) (3.) An alternate means of control demonstrated (with part B of the permit application) to provide fugitive emissions control equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

...(ii) (II) Automatic waste feed cutoff. A boiler or industrial furnace must be operated with a functioning system that automatically cuts off the hazardous waste feed when operating conditions deviate from those established under Section 8(c) of this Chapter. The Director may limit the number of cutoffs per an operating period on a case-by-case basis. In addition:

...(ii)(A) (1.) The permit limit for (the indicator of) minimum combustion chamber temperature must be maintained while hazardous waste or hazardous waste residues remain in the combustion chamber,

...(ii)(B) (2.) Exhaust gases must be ducted to the air pollution control system operated in accordance with the permit requirements while hazardous waste or hazardous waste residues remain in the combustion chamber; and

...(ii)(C) (3.) Operating parameters for which permit limits are established must continue to be monitored during the cutoff, and the hazardous waste feed shall not be restarted until the levels of those parameters comply with the permit limits. For parameters that may be monitored on an instantaneous basis, the Director will establish a minimum period of time after a waste feed cutoff during which the parameter must not exceed the permit limit before the hazardous waste feed may be restarted.

...(iii) (III) Changes. A boiler or industrial furnace must cease burning hazardous waste when changes in combustion properties, or feed rates of the hazardous waste, other fuels, or industrial furnace feedstocks, or changes in the boiler or industrial furnace design or operating conditions deviate from the limits as specified in the permit.

266.102(e)(8) (H) Monitoring and Inspections

...(i) (I) The owner or operator must monitor and record the following, at a minimum, while burning hazardous waste:

...(i)(A) (1.) If specified by the permit, feed rates and composition of hazardous waste, other fuels, and industrial furnace feedstocks, and feed rates of ash, metals, and total chloride and chlorine;

...(i)(B) (2.) If specified by the permit, carbon monoxide (CO), hydrocarbons (HC), and oxygen on a continuous basis at a common point in the boiler or industrial furnace downstream of the combustion zone and prior to release of stack gases to the atmosphere in accordance with operating requirements specified in Section 8(c)(v)(B)(II) of this Chapter. CO, HC, and oxygen monitors must be installed, operated, and maintained in accordance with methods specified in Appendix I of this Chapter.

...(i)(C) (3.) Upon the request of the Director, sampling and analysis of the hazardous waste (and other fuels and industrial furnace feedstocks as appropriate), residues, and exhaust emissions must be conducted to verify that the operating requirements established in the permit achieve the applicable standards of Sections 8(e), 8(f), 8(g), and 8(h) of this Chapter.

...(ii) (II) All monitors shall record data in units corresponding to the permit limit unless otherwise specified in the permit.

...(iii) (III) The boiler or industrial furnace and associated equipment (pumps, valves, pipes, fuel storage tanks, etc.) must be subjected to thorough visual inspection when it contains hazardous waste, at least daily for leaks, spills, fugitive emissions, and signs of tampering.

...(iv) (IV) The automatic hazardous waste feed cutoff system and associated alarms must be tested at least once every 7 days when hazardous waste is burned to verify operability, unless the applicant demonstrates to the Director that weekly inspections will unduly restrict or upset operations and that less frequent inspections will be adequate. At a minimum, operational testing must be conducted at least once every 30 days.

...(v) (V) These monitoring and inspection data must be recorded and the records must be placed in the operating record required by Chapter 10, Section 5(d) of these rules and regulations.

266.102(e)(9) (I) **Direct transfer of hazardous waste from a transport vehicle to a boiler or industrial furnace without the use of a storage unit is prohibited^.**

266.102(e)(10) (J) Recordkeeping. The owner or operator must keep in the operating record of the facility all information and data required by Section 8(c) of this Chapter until closure of the facility.

266.102(e)(11) (K) Closure. At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash, scrubber waters, and scrubber sludges) from the boiler or industrial furnace.

266.103 (d) **INTERIM STATUS FOR BURNERS IS PROHIBITED IN THE STATE OF WYOMING** ^

266.104 (e) STANDARDS TO CONTROL ORGANIC EMISSIONS

266.104(a) (i) DRE standard.

266.104(a)(1) (A) General. Except as provided in Section 8(e)(i)(C) of this Chapter, a boiler or industrial furnace burning hazardous waste must achieve a destruction and removal efficiency (DRE) of 99.99% for all organic hazardous constituents in the waste feed. To demonstrate conformance with this requirement, 99.99% DRE must be demonstrated during a trial burn for each principal organic hazardous constituent (POHC) designated (under Section 8(e)(i)(B) of this Chapter) in its permit for each waste feed. DRE is determined for each POHC from the following equation:

$$DRE = \left[1 - \frac{Wout}{Win}\right] \times 100$$

where:

W_{in}= Mass feed rate of one principal organic hazardous constituent (POHC) in the hazardous waste fired to the boiler or industrial furnace; and

W_{out}= Mass emission rate of the same POHC present in stack gas prior to release to the atmosphere.

266.104(a)(2) (B) Designation of POHCs. Principal organic hazardous constituents (POHCs) are those compounds for which compliance with the DRE requirements of Section 8(e) of this Chapter shall be demonstrated in a trial burn in conformance with procedures prescribed in Chapter 7, Section 1(g) of these rules and regulations. One or more POHCs shall be designated by the Director for each waste feed to be burned. POHCs shall be designated based on the degree of difficulty of destruction of the organic constituents in the waste and on their concentrations or mass in the waste feed considering the results of waste analyses submitted with part B of the permit application. POHCs are most likely to be selected from among those compounds listed in Chapter 2, Appendix H of these rules and regulations that are also present in the normal waste feed. However, if the applicant demonstrates to the Director’s satisfaction that a compound not listed in Appendix H or not present in the normal waste feed is a suitable indicator of compliance with the DRE requirements of Section 8(e) of this Chapter, that compound may be designated as a POHC. Such POHCs need not be toxic or organic compounds.

266.104(a)(3) (C) Dioxin-listed waste. A boiler or industrial furnace burning hazardous waste containing (or derived from) EPA Hazardous Wastes Nos. F020, F021, F022, F023, F026, or F027 must achieve a destruction and removal efficiency (DRE) of 99.9999% for each POHC designated (under Section 8(e)(i)(B) of this Chapter) in its permit. This performance must be demonstrated on POHCs that are more difficult to burn than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans. DRE is determined for each POHC from the equation in Section 8(e)(i)(A) of this Chapter. In addition, the owner or operator of the boiler or industrial furnace must notify the Director of intent to burn EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, or F027.

266.104(a)(4) (D) Waiver of DRE trial burn**. If the Director waives the trial burn under Section 8(k) of this Chapter**, owners and operators of boilers operated under the special operating requirements provided by Section 8(k) of this Chapter are considered to be in compliance with the DRE standard of Section 8(e)(i)(A) of this Chapter and are exempt from the DRE trial burn.

266.104(a)(5) (E) Low risk waste. **If the Director waives the DRE standard under Section 8(j)(i) of this Chapter,** owners and operators of boilers or industrial furnaces that burn hazardous waste in compliance with the requirements of Section 8(j)(i) of this Chapter are considered to be in compliance with the DRE standard of Section 8(e)(i)(A) of this Chapter and are exempt from the DRE trial burn.

266.104(b) (ii) Carbon monoxide standard.

266.104(b)(1) (A) Except as provided in Section 8(e)(iii) of this Chapter, the stack gas concentration of carbon monoxide (CO) from a boiler or industrial furnace burning hazardous waste cannot exceed 100 ppmv on an hourly rolling average basis (i.e., over any 60 minute period), continuously corrected to 7 percent oxygen, dry gas basis.

266.104(b)(2) (B) CO and oxygen shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste" in Appendix I of this Chapter.

266.104(b)(3) (C) Compliance with the 100 ppmv CO limit must be demonstrated during the trial burn^. To demonstrate compliance, the highest hourly rolling average CO level during any valid run of the trial burn must not exceed 100 ppmv.

266.104(c) (iii) Alternative carbon monoxide standard.

266.104(c)(1) (A) The stack gas concentration of carbon monoxide (CO) from a boiler or industrial furnace burning hazardous waste may exceed the 100 ppmv limit provided that stack gas concentrations of hydrocarbons (HC) do not exceed 20 ppmv, except as provided by Section 8(e)(vi) of this Chapter for certain industrial furnaces.

266.104(c)(2) (B) HC limits must be established under Section 8(e) of this Chapter on an hourly rolling average basis (i.e., over any 60 minute period), reported as propane, and continuously corrected to 7 percent oxygen, dry gas basis.

266.104(c)(3) (C) HC shall be continuously monitored in conformance with "Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste" in Appendix I of this Chapter. CO and oxygen shall be continuously monitored in conformance with Section 8(e)(ii)(B) of this Chapter.

266.104(c)(4) (D) The alternative CO standard is established based on CO data during the trial burn**^**. The alternative CO standard is the average over all valid runs of the highest hourly average CO level for each run. The CO limit is implemented on an hourly rolling average basis, and continuously corrected to 7 percent oxygen, dry gas basis.

266.104(d) (iv) Special requirements for furnaces. Owners and operators of industrial furnaces (e.g., kilns, cupolas) that feed hazardous waste for a purpose other than solely as an ingredient **(see paragraph (A) below) ^** at any location other than the end where products are normally discharged and where fuels are normally fired must comply with the hydrocarbon limits provided by Section 8(e)(iii) or 8(e)(vi) of this Chapter irrespective of whether stack gas CO concentrations meet the 100 ppmv limit of Section 8(e)(ii) of this Chapter.

266.103(a)(5)(ii) (A) Burning hazardous waste solely as an ingredient. A hazardous waste is burned for a purpose other than solely as an ingredient if it meets either of these criteria:

266.103(a)(5)(ii)(A) (I) The hazardous waste has a total concentration of nonmetal compounds listed in Chapter 2, Appendix H of these rules and regulations exceeding 500 ppm by weight, as-fired, and so is considered to be burned for destruction. The concentration of nonmetal compounds in a waste as-generated may be reduced to the 500 ppm limit by bona fide treatment that removes or destroys nonmetal constituents. Blending for dilution to meet the 500 ppm limit is prohibited and documentation that the waste has not been impermissibly diluted must be retained in the facility record; or

266.103(a)(5)(ii)(B) (II) The hazardous waste has a heating value of 5,000 Btu/lb or more, as-fired, and so is considered to be burned as fuel. The heating value of a waste as-generated may be reduced to below the 5,000 Btu/lb limit by bona fide treatment that removes or destroys organic constituents. Blending to augment the heating value to meet the 5,000 Btu/lb limit is prohibited and documentation that the waste has not been impermissibly blended must be retained in the facility record.

266.104(e) (v) Controls for dioxins and furans. Owners and operators of boilers and industrial furnaces that are equipped with a dry particulate matter control device that operates within the temperature range of 450-750 °F, and industrial furnaces operating under an alternative hydrocarbon limit established under Section 8(e)(vi) of this Chapter must conduct a site-specific risk assessment as follows to demonstrate that emissions of chlorinated dibenzo-p-dioxins and dibenzofurans do not result in an increased lifetime cancer risk to the hypothetical maximum exposed individual (MEI) exceeding 1 in **1,000,000**:

266.104(e)(1) (A) During the trial burn (for new facilities applying for a permit) Δ, determine emission rates of the tetra-octa congeners of chlorinated dibenzo-p-dioxins and dibenzofurans (CDDs/CDFs) using Method 23A, Sampling Method for Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans Emissions from Stationary Sources, EPA Publication SW-846, as incorporated by reference in Chapter 1, Section 1(g) of these rules and regulations.

266.104(e)(2) (B) Estimate the 2,3,7,8-TCDD toxicity equivalence of the tetra-octa CDDs/CDFs congeners using "Procedures for Estimating the Toxicity Equivalence of Chlorinated Dibenzo-p-Dioxin and Dibenzofuran Congeners" in Appendix I of this Chapter. Multiply the emission rates of CDD/CDF congeners with a toxicity equivalence greater than zero (see the procedure) by the calculated toxicity equivalence factor to estimate the equivalent emission rate of 2,3,7,8-TCDD;

266.104(e)(3) (C) Conduct dispersion modeling using methods recommended in appendix W of 40 CFR 51 ("Guideline on Air Quality Models (Revised)" (1986) and its supplements), the "Hazardous Waste Combustion Air Quality Screening Procedure", provided in Appendix I of this Chapter, or in Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (incorporated by reference in Chapter 1, Section 1(g)(i)(M) of these rules and regulations) to predict the maximum annual average off-site ground level concentration of 2,3,7,8-TCDD equivalents determined under Section 8(e)(v)(B) of this Chapter. The maximum annual average concentration must be used when a person resides on-site; and

266.104(e)(4) (D) The ratio of the predicted maximum annual average ground level concentration of 2,3,7,8-TCDD equivalents to the risk-specific dose for 2,3,7,8-TCDD provided in Appendix E of this Chapter (2.2 X 10^{-7}) shall not exceed 1.0.

266.104(f~~g~~) (vi) Monitoring CO and HC in the by-pass duct of a cement kiln. Cement kilns may comply with the carbon monoxide and hydrocarbon limits provided by Sections 8(e)(ii), 8(e)(iii), and 8(e)(iv) of this Chapter by monitoring in the by-pass duct provided that:

266.104(f~~g~~)(1) (A) Hazardous waste is fired only into the kiln and not at any location downstream from the kiln exit relative to the direction of gas flow; and

266.104(f~~g~~)(2) (B) The by-pass duct diverts a minimum of 10% of kiln off-gas into the duct.

266.104(g~~h~~) (vii) Use of emissions test data to demonstrate compliance and establish operating limits. Compliance with the requirements of Section 8(e) of this Chapter must be demonstrated simultaneously by emissions testing or during separate runs under identical operating conditions. Further, data to demonstrate compliance with the CO and HC limits of Section 8(e) of this Chapter or to establish alternative CO or HC limits under Section 8(e) of this Chapter must be obtained during the time that DRE testing, and where applicable, CDD/CDF testing under Section 8(e)(v) of this Chapter and comprehensive organic emissions testing under Section 8(e)(vi) of this Chapter is conducted.

266.104(h~~i~~) (viii) Enforcement. For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under Section 8(c) of this Chapter) will be regarded as compliance with Section 8(e) of this Chapter. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of Section 8(e) of this Chapter may be "information" justifying modification or revocation and re-issuance of a permit under Chapter 6, Section 2(b) of these rules and regulations.

266.105 (f) STANDARDS TO CONTROL PARTICULATE MATTER

266.105(a) (i) A boiler or industrial furnace burning hazardous waste may not emit particulate matter in excess of 180 milligrams per dry standard cubic meter (0.08 grains per dry standard cubic foot) after correction to a stack gas concentration of 7% oxygen, using procedures prescribed in 40 CFR part 60, Appendix A, methods 1 through 5, and Appendix I of this Chapter.

266.105(b) (ii) An owner or operator meeting the requirements of Section 8(j)(ii) of this Chapter for the low risk waste exemption is exempt from the particulate matter standard.

266.105(c) (iii) For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under Section 8(c) of this Chapter) will be regarded as compliance with Section 8(f) of this Chapter. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of Section 8(f) of this Chapter may be "information" justifying modification or revocation and re-issuance of a permit under Chapter 6, Section 2(b) of these rules and regulations.

266.106 (g) STANDARDS TO CONTROL METALS EMISSIONS

266.106(a) (i) General. The owner or operator must comply with the metals standards provided by Sections 8(g)(ii), 8(g)(iii), 8(g)(iv), 8(g)(v), or 8(g)(vi) of this Chapter for each metal listed in Section 8(g)(ii) of this Chapter that is present in the hazardous waste at detectable levels using analytical procedures specified in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846), incorporated by reference in Chapter 1, Section 1(g)(i)(L) of these rules and regulations.

266.106(b) (ii) Tier I feed rate screening limits. Feed rate screening limits for metals are specified in Appendix A of this Chapter as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. Criteria for facilities that are not eligible to comply with the screening limits are provided in Section 8(g)(ii)(G) of this Chapter.

266.106(b)(1) (A) Noncarcinogenic metals. The feed rates of antimony, barium, lead, mercury, thallium, and silver in all feed streams, including hazardous waste, fuels, and industrial furnace feed stocks shall not exceed the screening limits specified in Appendix A of this Chapter.

...(i) (I) The feed rate screening limits for antimony, barium, mercury, thallium, and silver are based on either:

...(i)(A) (1.) An hourly rolling average as defined in Section 8(c)(v)(F)(I)(2.) of this Chapter; or

...(i)(B) (2.) An instantaneous limit not to be exceeded at any time.

...(ii) (II) The feed rate screening limit for lead is based on one of the following:

...(ii)(A) (1.) An hourly rolling average as defined in Section 8(c)(v)(F)(I)(2.) of this Chapter;

...(ii)(B) (2.) An averaging period of 2 to 24 hours as defined in Section 8(c)(v)(F)(II) of this Chapter with an instantaneous feed rate limit not to exceed 10 times the feed rate that would be allowed on an hourly rolling average basis; or

...(ii)(C) (3.) An instantaneous limit not to be exceeded at any time.

266.106(b)(2) (B) Carcinogenic metals.

...(i) (I) The feed rates of arsenic, cadmium, beryllium, and chromium in all feed streams, including hazardous waste, fuels, and industrial furnace feed stocks shall not exceed values derived from the screening limits specified in Appendix A of this Chapter. The feed rate of each of these metals is limited to a level such that the sum of the ratios of the actual feed rate to the feed rate screening limit specified in Appendix A shall not exceed 1.0, as provided by the following equation:

$$\sum_{i=1}^{n} \frac{AFR_{(i)}}{FRSL_{(i)}} \leq 1.0$$

where:

n = number of carcinogenic metals

AFR = actual feed rate to the device for metal "i"

FRSL = feed rate screening limit provided by Appendix A of this Chapter for metal "i".

...(ii) (II) The feed rate screening limits for the carcinogenic metals are based on either:

...(ii)(A) (1.) An hourly rolling average; or

...(ii)(B) (2.) An averaging period of 2 to 24 hours as defined in Section 8(c)(v)(F)(II) of this Chapter with an instantaneous feed rate limit not to exceed 10 times the feed rate that would be allowed on an hourly rolling average basis.

266.106(b)(3) (C) Terrain-adjusted effective stack height (TESH).

...(i) (I) The terrain-adjusted effective stack height is determined according to the following equation:

$$TESH = Ha + H1 - Tr$$

where:

Ha=Actual physical stack height

H1=Plume rise as determined from Appendix F of this Chapter as a function of stack flow rate and stack gas exhaust temperature.

Tr=Terrain rise within five kilometers of the stack.

...(ii) (II) The stack height (Ha) may not exceed good engineering practice as specified in 40 CFR part 51.100(ii).

...(iii) (III) If the TESH for a particular facility is not listed in the table in the appendices, the nearest lower TESH listed in the table shall be used. If the TESH is four meters or less, a value of four meters shall be used.

266.106(b)(4) (D) Terrain type. The screening limits are a function of whether the facility is located in noncomplex or complex terrain. A device located where any part of the surrounding terrain within 5 kilometers of the stack equals or exceeds the elevation of the physical stack height (Ha) is considered to be in complex terrain and the screening limits for complex terrain apply. Terrain measurements are to be made from U.S. Geological Survey 7.5-minute topographic maps of the area surrounding the facility.

266.106(b)(5) (E) Land use. The screening limits are a function of whether the facility is located in an area where the land use is urban or rural. To determine whether land use in the vicinity of the facility is urban or rural, procedures provided in Appendices I of this Chapter or Appendix W of 40 CFR part 51 shall be used.

266.106(b)(6) (F) Multiple stacks. Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls of metals emissions under a State of Wyoming hazardous waste management facility permit ^ must comply with the screening limits for all such units assuming all hazardous waste is fed into the device with the worst-case stack based on dispersion characteristics. The worst-case stack is determined from the following equation as applied to each stack:

$$K = HVT$$

Where:

K=a parameter accounting for relative influence of stack height and plume rise;

H=physical stack height (meters);

V=stack gas flow rate (m^3/second); and

T=exhaust temperature (°K).

The stack with the lowest value of K is the worst-case stack.

266.106(b)(7) (G) Criteria for facilities not eligible for screening limits. If any criteria below are met, the Tier I and Tier II screening limits do not apply. Owners and operators of such facilities must comply with either the Tier III standards provided by Section 8(g)(iv) of this Chapter or with the adjusted Tier I feed rate screening limits provided by Section 8(g)(v) of this Chapter.

...(i) (I) The device is located in a narrow valley less than one kilometer wide;

...(ii) (II) The device has a stack taller than 20 meters and is located such that the terrain rises to the physical height within one kilometer of the facility;

...(iii) (III) The device has a stack taller than 20 meters and is located within five kilometers of a shoreline of a large body of water such as an ocean or large lake;

...(iv) (IV) The physical stack height of any stack is less than 2.5 times the height of any building within five building heights or five projected building widths of the stack and the distance from the stack to the closest boundary is within five building heights or five projected building widths of the associated building; or

...(v) (V) The Director determines that standards based on site-specific dispersion modeling are required.

266.106(b)(8) (H) Implementation. The feed rate of metals in each feedstream must be monitored to ensure that the feed rate screening limits are not exceeded.

266.106(c) (iii) Tier II emission rate screening limits. Emission rate screening limits are specified in Appendix A of this Chapter as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. Criteria for facilities that are not eligible to comply with the screening limits are provided in Section 8(g)(ii)(G) of this Chapter.

266.106(c)(1) (A) Noncarcinogenic metals. The emission rates of antimony, barium, lead, mercury, thallium, and silver shall not exceed the screening limits specified in Appendix A of this Chapter.

266.106(c)(2) (B) Carcinogenic metals. The emission rates of arsenic, cadmium, beryllium, and chromium shall not exceed values derived from the screening limits specified in Appendix A of this Chapter. The emission rate of each of these metals is limited to a level such that the sum of the ratios of the actual emission rate to the emission rate screening limit specified in Appendix A shall not exceed 1.0, as provided by the following equation:

$$\sum_{i=1}^{n} \frac{AER_{(i)}}{ERSL_{(i)}} \leq 1.0$$

where:

n = number of carcinogenic metals

AER = actual emission rate for metal "i"

ERSL = emission rate screening limit provided by Appendix A of this Chapter for metal "i".

266.106(c)(3) (C) Implementation. The emission rate limits must be implemented by limiting feed rates of the individual metals to levels during the trial burn ^. The feed rate averaging periods are the same as provided by Sections 8(g)(ii)(A)(I) and 8(g)(ii)(A)(II) and 8(g)(ii)(B)(II) of this Chapter. The feed rate of metals in each feedstream must be monitored to ensure that the feed rate limits for the feedstreams specified under Section 8(c) are not exceeded.

266.106(c)(4) (D) Definitions and limitations. The definitions and limitations provided by Section 8(g)(ii) of this Chapter for the following terms also apply to the Tier II emission rate screening limits provided by Section 8(g)(iii) of this Chapter: terrain-adjusted effective stack height, good engineering practice stack height, terrain type, land use, and criteria for facilities not eligible to use the screening limits.

266.106(c)(5) (E) Multiple stacks.

...(i) (I) Owners and operators of facilities with more than one onsite stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on metals emissions under a State of Wyoming hazardous waste management facility permit ^ must comply with the emissions screening limits for any such stacks assuming all hazardous waste is fed into the device with the worst-case stack based on dispersion characteristics.

...(ii) (II) The worst-case stack is determined by procedures provided in Section 8(g)(ii)(F) of this Chapter.

...(iii) (III) For each metal, the total emissions of the metal from those stacks shall not exceed the screening limit for the worst-case stack.

266.106(d) (iv) Tier III and Adjusted Tier I site-specific risk assessment. The requirements of Section 8(g)(iv) of this Chapter apply to facilities complying with either the Tier III or Adjusted Tier I controls, except where specified otherwise.

266.106(d)(1) (A) General. Conformance with the Tier III metals controls must be demonstrated by emissions testing to determine the emission rate for each metal. In addition, conformance with either the Tier III or Adjusted Tier I metals controls must be demonstrated by air dispersion modeling to predict the maximum annual average off-site ground level concentration for each dispersion modeling to predict the maximum annual average off-site ground level concentration for each metal, and a demonstration that acceptable ambient levels are not exceeded.

266.106(d)(2) (B) Acceptable ambient levels. Appendices D and E of this Chapter list the acceptable ambient levels for purposes of this rule. Reference air concentrations (RACs) are listed for the noncarcinogenic metals and 10^{-5} risk-specific doses (RSDs) are listed for the carcinogenic metals. The RSD for a metal is the acceptable ambient level for that metal provided that only one of the four carcinogenic metals is emitted. If more than one carcinogenic metal is emitted, the acceptable ambient level for the carcinogenic metals is a fraction of the RSD as described in Section 8(g)(iv)(C) of this Chapter.

266.106(d)(3) (C) Carcinogenic metals. For the carcinogenic metals, arsenic, cadmium, beryllium, and chromium, the sum of the ratios of the predicted maximum annual average off-site ground level concentrations (except that on-site concentrations must be considered if a person resides on site) to the risk-specific dose (RSD) for all carcinogenic metals emitted shall not exceed 1.0 as determined by the following equation:

$$\sum_{i=1}^{n} \frac{\text{Predicted Ambient Concentration}_{(i)}}{\text{Risk - Specific Dose}_{(i)}} \leq 1.0$$

where: n=number of carcinogenic metals

266.106(d)(4) (D) Noncarcinogenic metals. For the noncarcinogenic metals, the predicted maximum annual average off-site ground level concentration for each metal shall not exceed the reference air concentration (RAC).

266.106(d)(5) (E) Multiple stacks. Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on metals emissions under a State of Wyoming hazardous waste management facility permit ^ must conduct emissions testing (except that facilities complying with Adjusted Tier I controls need not conduct emissions testing) and dispersion modeling to demonstrate that the aggregate emissions from all such on-site stacks do not result in an exceedance of the acceptable ambient levels.

266.106(d)(6) (F) Implementation. Under Tier III, the metals controls must be implemented by limiting feed rates of the individual metals to levels during the trial burn^. The feed rate averaging periods are the same as provided by Sections 8(g)(ii)(A)(I) and 8(g)(ii)(A)(II) and 8(g)(ii)(B)(II) of this Chapter. The feed rate of metals in each feedstream must be monitored to ensure that the feed rate limits for the feedstreams specified under Section 8(c) of this Chapter are not exceeded.

266.106(e) (v) Adjusted Tier I feed rate screening limits. The owner or operator may adjust the feed rate screening limits provided by Appendix A of this Chapter to account for site-specific dispersion modeling. Under this approach, the adjusted feed rate screening limit for a metal is determined by back-calculating from the acceptable ambient level provided by Appendices D and E of this Chapter using dispersion modeling to determine the maximum allowable emission rate. This emission rate becomes the adjusted Tier I feed rate screening limit. The feed rate screening limits for carcinogenic metals are implemented as prescribed in Section 8(g)(ii)(B) of this Chapter.

266.106(f) (vi) Alternative implementation approaches.

266.106(f)(1) (A) The Director may approve on a case-by-case basis approaches to implement the Tier II or Tier III metals emission limits provided by Section 8(g)(iii) or 8(g)(iv) of this Chapter alternative to monitoring the feed rate of metals in each feedstream.

266.106(f)(2) (B) The emission limits provided by Section 8(g)(iv) of this Chapter must be determined as follows:

...(i) (I) For each noncarcinogenic metal, by back-calculating from the RAC provided in Appendix D of this Chapter to determine the allowable emission rate for each metal using the dilution factor for the maximum annual average ground level concentration predicted by dispersion modeling in conformance with Section 8 (g)(viii) of this Chapter; and

...(ii) (II) For each carcinogenic metal by:

...(ii)(A) (1.) Back-calculating from the RSD provided in Appendix E of this Chapter to determine the allowable emission rate for each metal if that metal were the only carcinogenic metal emitted using the dilution factor for the maximum annual average ground level concentration predicted by dispersion modeling in conformance with Section 8(g)(viii) of this Chapter; and

...(ii)(B) (2.) If more than one carcinogenic metal is emitted, selecting an emission limit for each carcinogenic metal not to exceed the emission rate determined by Section 8(g)(vi)(B)(II)(1.) of this Chapter such that the sum for all carcinogenic metals of the ratios of the selected emission limit to the emission rate determined by that Section does not exceed 1.0.

266.106(g) (vii) Emission testing.

266.106(g)(1) (A) General. Emission testing for metals shall be conducted using Method 0060, Determinations of Metals in Stack Emissions, EPA Publication SW-846, as incorporated by reference in Chapter 1, Section 1(g) of these rules and regulations.

266.106(g)(2) (B) Hexavalent chromium. Emissions of chromium are assumed to be hexavalent chromium unless the owner or operator conducts emissions testing to determine hexavalent chromium emissions using procedures prescribed in Method 0061, Determination of Hexavalent Chromium Emissions from Stationary Sources, EPA Publication SW-846, as incorporated by reference in Chapter 1, Section 1(g) of these rules and regulations.

266.106(h) (viii) Dispersion modeling. Dispersion modeling required under Section 8(g) of this Chapter shall be conducted according to methods recommended in Appendix W of 40 CFR 51 of this Chapter ("Guideline on Air Quality Models (Revised)" (1986) and its supplements), the "Hazardous Waste Combustion Air Quality Screening Procedure", provided in Appendix I of this Chapter, or in Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised (incorporated by reference in Chapter 1, Section 1(g)(i)(M) of these rules and regulations) to predict the maximum annual average off-site ground level concentration. However, on-site concentrations must be considered when a person resides on-site.

266.106(i) (ix) Enforcement. For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under Section 8(c) of this Chapter) will be regarded as compliance with Section 8(g) of these rules and regulations. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of Section 8(g) of this Chapter ~~[this Section]~~ may be "information" justifying modification or revocation and re-issuance of a permit under Chapter 6, Section 2(b) of these rules and regulations.

266.107 (h) STANDARDS TO CONTROL HYDROGEN CHLORIDE (HCL) AND CHLORINE GAS (CL_2) EMISSIONS

266.107(a) (i) General. The owner or operator must comply with ^ the chlorine (Cl_2) controls provided by Section 8(h)(ii), 8(h)(iii) or 8(h)(iv) of this Chapter. **For hydrogen chloride (HCl), the owner or operator must comply with either the HCl controls provided by Section 8(h)(ii), 8(h)(iii), or 8(h)(iv) of this Chapter, or the HCL emission standards in Chapter 10, Section 14(d)(ii), whichever are**

more stringent.

266.107(b) (ii) Screening limits.

266.107(b)(1) (A) Tier I feed rate screening limits. Feed rate screening limits are specified for total chlorine in Appendix B of this Chapter as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. The feed rate of total chlorine and chloride, both organic and inorganic, in all feed streams, including hazardous waste, fuels, and industrial furnace feed stocks shall not exceed the levels specified.

266.107(b)(2) (B) Tier II emission rate screening limits. Emission rate screening limits for HCl and Cl_2 are specified in Appendix C of this Chapter as a function of terrain-adjusted effective stack height and terrain and land use in the vicinity of the facility. The stack emission rates of HCl and Cl_2 shall not exceed the levels specified.

266.107(b)(3) (C) Definitions and limitations. The definitions and limitations provided by Section 8(g)(ii) of this Chapter for the following terms also apply to the screening limits provided by Section 8(h)(ii) of this Chapter: terrain-adjusted effective stack height, good engineering practice stack height, terrain type, land use, and criteria for facilities not eligible to use the screening limits.

266.107(b)(4) (D) Multiple stacks. Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on HCl or Cl_2 emissions under a State of Wyoming hazardous waste management facility permit ^ must comply with the Tier I and Tier II screening limits for those stacks assuming all hazardous waste is fed into the device with the worst-case stack based on dispersion characteristics.

...(i) (I) The worst-case stack is determined by procedures provided in Section 8(g)(ii)(F) of this Chapter.

...(ii) (II) Under Tier I, the total feed rate of chlorine and chloride to all subject devices shall not exceed the screening limit for the worst-case stack.

...(iii) (III) Under Tier II, the total emissions of HCl and Cl_2 from all subject stacks shall not exceed the screening limit for the worst-case stack.

266.107(c) (iii) Tier III site-specific risk assessments.

266.107(c)(1) (A) General. Conformance with the Tier III controls must be demonstrated by emissions testing to determine the emission rate for HCl and Cl_2, air dispersion modeling to predict the maximum annual average off-site ground level concentration for each compound, and a demonstration that acceptable ambient levels are not exceeded.

266.107(c)(2) (B) Acceptable ambient levels. Appendix D of this Chapter lists the reference air concentrations (RACs) for HCl (7 micrograms per cubic meter) and Cl_2 (0.4 micrograms per cubic meter).

266.107(c)(3) (C) Multiple stacks. Owners and operators of facilities with more than one on-site stack from a boiler, industrial furnace, incinerator, or other thermal treatment unit subject to controls on HCl or Cl_2 emissions under a State of Wyoming hazardous waste management facility permit ^ must conduct emissions testing and dispersion modeling to demonstrate that the aggregate emissions from all such on-site stacks do not result in an exceedance of the acceptable ambient levels for HCl and Cl_2.

266.107(d) (iv) Averaging periods. The HCl and Cl_2 controls are implemented by limiting the feed rate of total chlorine and chloride in all feedstreams, including hazardous waste, fuels, and industrial furnace feed stocks. Under Tier I, the feed rate of total chloride and chlorine is limited to the Tier I Screening Limits. Under Tier II and Tier III, the feed rate of total chloride and chlorine is limited to the feed rates during the trial burn ^. The feed rate limits are based on either:

266.107(d)(1) (A) An hourly rolling average as defined in Section 8(c)(v)(F) of this Chapter; or

266.107(d)(2) (B) An instantaneous basis not to be exceeded at any time.

266.107(e) (v) Adjusted Tier I feed rate screening limits. The owner or operator may adjust the feed rate screening limit provided by Appendix B of this Chapter to account for site-specific dispersion modeling. Under this approach, the adjusted feed rate screening limit is determined by back-calculating from the acceptable ambient level for Cl_2 provided by Appendix D of this Chapter using dispersion modeling to determine the maximum allowable emission rate. This emission rate becomes the adjusted Tier I feed rate screening limit.

266.107(f) (vi) Emissions testing. Emissions testing for HCl and Cl_2 shall be conducted using the procedures described in Methods 0050 or 0051, EPA Publication SW-846, as incorporated by reference in Chapter 1, Section 1(g) of these rules and regulations.

226.107(g) (vii) Dispersion modeling. Dispersion modeling shall be conducted according to the provisions of Section 8(g)(viii) of this Section.

266.107(h) (viii) Enforcement. For the purposes of permit enforcement, compliance with the operating requirements specified in the permit (under Section 8(c) of this Chapter) will be regarded as compliance with Section 8(h) of this Chapter. However, evidence that compliance with those permit conditions is insufficient to ensure compliance with the requirements of Section 8(h) of this Chapter may be "information" justifying modification or revocation and re-issuance of a permit under Chapter 6, Section 2(b) of these rules and regulations.

266.108 (i) SMALL QUANTITY ON-SITE BURNER EXEMPTION

266.108(a) (i) Exempt quantities. Owners and operators of facilities that burn hazardous waste in an on-site boiler or industrial furnace are exempt from the requirements of Section 8(c) of this Chapter provided that:

266.108(a)(1) (A) The quantity of hazardous waste burned in a device for a calendar month does not exceed the limits provided in the following table based on the terrain-adjusted effective stack height as defined in Section 8(g)(ii)(C) of this Chapter:

Exempt Quantities for Small Quantity Burner Exemption

Terrain-adjusted effective stack height of device (meters)	Allowable hazardous waste burning rate (gallons/month)
0 to 3.9	0
4.0 to 5.9	13
6.0 to 7.9	18
8.0 to 9.9	27
10.0 to 11.9	40
12.0 to 13.9	48
14.0 to 15.9	59
16.0 to 17.9	69
18.0 to 19.9	76
20.0 to 21.9	84
22.0 to 23.9	93
24.0 to 25.9	100
26.0 to 27.9	110
28.0 to 29.9	130
30.0 to 34.9	140
35.0 to 39.9	170
40.0 to 44.9	210
45.0 to 49.9	260
50.0 to 54.9	330
55.0 to 59.9	400
60.0 to 64.9	490
65.0 to 69.9	610
70.0 to 74.9	680
75.0 to 79.9	760
80.0 to 84.9	850
85.0 to 89.9	960
90.0 to 94.9	1,100
95.0 to 99.9	1,200
100.0 to 104.9	1,300
105.0 to 109.9	1,500
110.0 to 114.9	1,700
115.0 or greater	1,900

266.108(a)(2) (B) The maximum hazardous waste firing rate does not exceed at any time one (1) percent of the total fuel requirements for the device (hazardous waste plus other fuel) on a total heat input or mass input basis, whichever results in the lower mass feed rate of hazardous waste.

266.108(a)(3) (C) The hazardous waste has a minimum heating value of 5,000 Btu/lb, as generated; and

266.108(a)(4) (D) The hazardous waste fuel does not contain (and is not derived from) EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, or F027.

266.108(b) (ii) Mixing with nonhazardous fuels. If hazardous waste fuel is mixed with a nonhazardous fuel, the quantity of hazardous waste before such mixing is used to comply with Section (i)(i) of this Chapter.

266.108(c) (iii) Multiple stacks. If an owner or operator burns hazardous waste in more than one on-site boiler or industrial furnace exempt under this Section, the quantity limits provided by Section 8(i)(i)(A) of this Chapter are implemented according to the following equation:

$$\sum_{i=1}^{n} \frac{ActualQuantity}{AllowableQuantityBurned(i)} \leq 1.0$$

where:

n means the number of stacks;

Actual Quantity Burned means the waste quantity burned per month in device "i";

Allowable Quantity Burned means the maximum allowable exempt quantity for stack "i" from the table in Section 8(i)(i)(A) of this Chapter.

[Note: Hazardous wastes that are subject to the special requirements for small quantity generators under Chapter 2, Section 1(e) of these rules and regulations may be burned in an off-site device under the exemption provided by Section 8(i) of this Chapter, but must be included in the quantity determination for the exemption.]

266.108(d) (iv) Notification requirements. The owner or operator of facilities qualifying for the small quantity burner exemption under Section 8(i) of this Chapter must provide a one-time signed, written notice to the DEQ indicating the following:

266.108(d)(1) (A) The combustion unit is operating as a small quantity burner of hazardous waste;

266.108(d)(2) (B) The owner and operator are in compliance with the requirements of Section 8(i) of this Chapter; and

266.108(d)(3) (C) The maximum quantity of hazardous waste that the facility may burn per month as provided by Section 8(i)(i)(A) of this Chapter.

266.108(e) (v) Recordkeeping requirements. The owner or operator must maintain at the facility for at least three years sufficient records documenting compliance with the hazardous waste quantity, firing rate, and heating value limits of Section 8(i) of this Chapter. At a minimum, these records must indicate the quantity of hazardous waste and other fuel burned in each unit per calendar month, and the heating value of the hazardous waste.

266.109 (j) LOW RISK WASTE EXEMPTION

266.109(a) (i) Waiver of DRE standard. **The Director may waive** the DRE standard of Section 8(e)(i) of this Chapter ^, if the boiler or industrial furnace is operated in conformance with Section 8(j)(i)(A) of this Chapter and the owner or operator demonstrates by procedures prescribed in Section 8(j)(i)(B) of this Chapter that the burning will not result in unacceptable adverse health effects.

266.109(a)(1) (A) The device shall be operated as follows:

...(i) (I) A minimum of 50 percent of fuel fired to the device shall be fossil fuel, fuels derived from fossil fuel, tall oil, or, if approved by the Director on a case-by-case basis, other nonhazardous fuel with combustion characteristics comparable to fossil fuel. Such fuels are termed "primary fuel" for purposes of

Section 8(j) of this Chapter. (Tall oil is a fuel derived from vegetable and rosin fatty acids.) The 50 percent primary fuel firing rate shall be determined on a total heat or mass input basis, whichever results in the greater mass feed rate of primary fuel fired;

...(ii) (II) Primary fuels and hazardous waste fuels shall have a minimum as-fired heating value of 8,000 Btu/lb;

...(iii) (III) The hazardous waste is fired directly into the primary fuel flame zone of the combustion chamber; and

...(iv) (IV) The device operates in conformance with the carbon monoxide controls provided by Section 8(e)(ii)(A) of this Chapter. Devices subject to the exemption provided by Section 8(j) of this Chapter are not eligible for the alternative carbon monoxide controls provided by Section 8(e)(iii) of this Chapter.

266.109(a)(2) (B) Procedures to demonstrate that the hazardous waste burning will not pose unacceptable adverse public health effects are as follows:

...(i) (I) Identify and quantify those nonmetal compounds listed in Chapter 2, Appendix H of these rules and regulations that could reasonably be expected to be present in the hazardous waste. The constituents excluded from analysis must be identified and the basis for their exclusion explained;

...(ii) (II) Calculate reasonable, worst case emission rates for each constitu~~t~~ent identified in Section 8(j)(i)(B)(I) of this Chapter by assuming the device achieves 99.9 percent destruction and removal efficiency. That is, assume that 0.1 percent of the mass weight of each constitu~~t~~ent fed to the device is emitted.

...(iii) (III) For each constituent identified in Section 8(j)(i)(B)(I) of this Chapter, use emissions dispersion modeling to predict the maximum annual average ground level concentration of the constituent.

...(iii)(A) (1.) Dispersion modeling shall be conducted using methods specified in Section 8(g)(viii) of this Chapter.

...(iii)(B) (2.) Owners and operators of facilities with more than one on-site stack from a boiler or industrial furnace that is exempt under Section 8(j) of this Chapter must conduct dispersion modeling of emissions from all stacks exempt under Section 8(j) of this Chapter to predict ambient levels prescribed by Section 8(j)(i) of this Chapter.

...(iv) (IV) Ground level concentrations of constituents predicted under Section 8(j)(i)(B)(III) of this Chapter must not exceed the following levels:

...(iv)(A) (1.) For the noncarcinogenic compounds listed in Appendix D of this Chapter, the levels established in Appendix D;

...(iv)(B) (2.) For the carcinogenic compounds listed in Appendix E of this Chapter, the sum for all constituents of the ratios of the actual ground level concentration to the level established in Appendix E cannot exceed 1.0; and

...(iv)(C) (3.) For constituents not listed in Appendix D or E, 0.1 micrograms per cubic meter.

266.109(b) (ii) Waiver of particular matter standard. **The Director may waive** the particulate matter standard of Section 8(f) of this Chapter **^** if:

266.109(b)(1) (A) The DRE standard is waived under Section 8(j)(i) of this Chapter; and

266.109(b)(2) (B) The owner or operator complies with the Tier I or adjusted Tier I metals feed rate screening limits provided by Section 8(g)(ii) or 8(g)(v) of this Chapter.

266.110 (k) WAIVER OF DRE TRIAL BURN FOR BOILERS **The Director may waive the trial burn required under Section 8(e)(i) of this Chapter, for** boilers that operate under the special requirements of Section 8(k) of this Chapter, and that do not burn hazardous waste containing (or derived from) EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, or F027. **Such boilers** are considered to be in conformance with the DRE standard of Section 8(e)(i) of this Chapter, and a trial burn to demonstrate DRE **may be** waived **by the Director. The Director shall not waive the trial burn unless:**

266.110(a) (i) A minimum of 50 percent of fuel fired to the device shall be fossil fuel, fuels derived from fossil fuel, tall oil, or, if approved by the Director on a case-by-case basis, other nonhazardous fuel with combustion characteristics comparable to fossil fuel. Such fuels are termed "primary fuel" for purposes of Section 8(k) of this Chapter. (Tall oil is a fuel derived from vegetable and rosin fatty acids.) The 50 percent primary fuel firing rate shall be determined on a total heat or mass input basis, whichever results in the greater mass feed rate of primary fuel fired;

266.110(b) (ii) Boiler load shall not be less than 40 percent. Boiler load is the ratio at any time of the total heat input to the maximum design heat input;

266.110(c) (iii) Primary fuels and hazardous waste fuels shall have a minimum as-fired heating value of 8,000 Btu/lb, and each material fired in a burner where hazardous waste is fired must have a heating value of at least 8,000 Btu/lb, as-fired;

266.110(d) (iv) The device shall operate in conformance with the carbon monoxide standard provided by Section 8(e)(ii)(A) of this Chapter. Boilers **subject to the waiver** of the DRE trial burn provided by Section 8(k) of this Chapter are not eligible for the alternative carbon monoxide standard provided by Section 8(e)(iii) of this Chapter;

266.110(e) (v) The boiler must be a watertube type boiler that does not feed fuel using a stoker or stoker type mechanism; and

266.110(f) (vi) The hazardous waste shall be fired directly into the primary fuel flame zone of the combustion chamber with an air or steam atomization firing system, mechanical atomization system, or a rotary cup atomization system under the following conditions:

266.110(f)(1) (A) Viscosity. The viscosity of the hazardous waste fuel as-fired shall not exceed 300 SSU;

266.110(f)(2) (B) Particle size. When a high pressure air or steam atomizer, low pressure atomizer, or mechanical atomizer is used, 70% of the hazardous waste fuel must pass through a 200 mesh (74 micron) screen, and when a rotary cup atomizer is used, 70% of the hazardous waste must pass through a 100 mesh (150 micron) screen;

266.110(f)(3) (C) Mechanical atomization systems. Fuel pressure within a mechanical atomization system and fuel flow rate shall be maintained within the design range taking into account the viscosity and volatility of the fuel;

266.110(f)(4) (D) Rotary cup atomization systems. Fuel flow rate through a rotary cup atomization system must be maintained within the design range taking into account the viscosity and volatility of the fuel.

266.111 (l) STANDARDS FOR DIRECT TRANSFER

266.111(a) (i) **Reserved^.**

266.111(b) (ii) Definitions. The following term is defined in Chapter 1, Section 1(f)(i) of these rules and regulations: "container."

266.111(b)(2) (A) **Reserved^.**

266.111(c) (iii) **The transfer of hazardous waste directly from a transport vehicle to a boiler or industrial furnace, without the use of a storage unit, is prohibited^.**

226.111(d) (iv) **Reserved^.**

226.111(e) (v) **Reserved^.**

266.112 (m) REGULATION OF RESIDUES A residue derived from the burning or processing of hazardous waste in a boiler or industrial furnace is not excluded from the definition of a hazardous waste under Chapter 2, Section 1(d)(ii)(D), Section 1(d)(ii)(G), or Section 1(d)(ii)(H) of these rules and regulations unless the device and the owner or operator meet the following requirements:

266.112(a) (i) The device meets the following criteria:

266.112(a)(1) (A) Boilers. Boilers must burn at least 50% coal on a total heat input or mass input basis, whichever results in the greater mass feed rate of coal;

266.112(a)(2) (B) Ore or mineral furnaces. Industrial furnaces subject to Chapter 2, Section 1(d)(ii)(G) of these rules and regulations must process at least 50% by weight normal, nonhazardous raw materials;

266.112(a)(3) (C) Cement kilns. Cement kilns must process at least 50% by weight normal cement-production raw materials;

266.112(b) (ii) **^ The unit burns only characteristic hazardous waste as outlined in Chapter 2, Sections 2(a) and 3, and no listed hazardous wastes as outlined in Chapter 2, Sections 2(b) and 4 of these rules and regulations, and**

(iii) **The residues are not characteristic hazardous waste.**

266.112(c) (iv) Records sufficient to document compliance with the provisions of Section 8(m) of this Chapter shall be retained until closure of the boiler or industrial furnace unit. ^

(n) ADDITIONAL CRITERIA FOR WAIVERS In making a determination under Sections 8(j) or 8(k) of this Chapter to grant a waiver of any DRE or particulate standard or any DRE trial burn requirement, the Director shall consider:

(i) The source of waste to be incinerated;

(ii) The extent to which the applicant can demonstrate control over the chemical quality of wastes to be incinerated, to assure that a consistent quality of hazardous wastes meeting the chemical specifications of wastes described in the permit application is received for incineration; and

(iii) Other factors he or she determines are material.

279/Subpart A Section 9. USED OIL DEFINITIONS

279.1 (i) The following terms are defined in Chapter 1, Section 1(f)(i) of these rules and regulations: "Aboveground tank," "Container," "Do-it-yourselfer used oil collection center," "Existing tank," "Household 'do-it-yourselfer' used oil," "Household 'do-it-yourselfer' used oil generator," "New tank," "Processing," "Re-refining distillation bottoms," "Tank," "Used oil," "Used oil aggregation point," "Used oil burner," "Used oil collection center," "Used oil fuel marketer," "Used oil generator," "Used oil processor/re-refiner," "Used oil transfer facility," and "Used oil transporter."

279/Subpart B Section 10. APPLICABILITY OF USED OIL STANDARDS

279.10 (a) APPLICABILITY Section 10(a) of this Chapter identifies those materials which are subject to regulation as used oil under Sections 9 through 17 of this Chapter. Section 10(a) of this Chapter also identifies some materials that are not subject to regulation as used oil under Sections 9 through 17 of this Chapter, and indicates whether these materials may be subject to regulation as hazardous waste under Chapter 1, Sections 1(a)-1(j) through (i) and Section 3; Chapters 2 through 11; Chapter 12, Sections 1 through 8, 19 and 20; and Chapter 13 of these rules and regulations.

279.10(a) (i) Used oil. EPA presumes that used oil is to be recycled unless a used oil handler disposes of used oil, or sends used oil for disposal. Except as provided in Section 10(b) of this Chapter, the regulations of Sections 9 through 17 of this Chapter apply to used oil, and to materials identified in Section 10(a) of this Chapter as being subject to regulation as used oil, whether or not the used oil or material exhibits any characteristics of hazardous waste identified in Chapter 2, Section 3 of these rules and regulations.

279.10(b) (ii) Mixtures of used oil and hazardous waste

279.10(b)(1) (A) Listed hazardous waste.

...(i) (I) Mixtures of used oil and hazardous waste that is listed in Chapter 2, Section 4 of these rules and regulations are subject to regulation as hazardous waste under Chapter 1, Sections 1(a)-(j) and Section 3; Chapters 2 through 11; Chapter 12, Sections 1 through 8, 19 and 20; and Chapter 13 of these rules and regulations, rather than as used oil under Sections 9 through 17 of this Chapter.

…(ii) (II) Rebuttable presumption for used oil. Used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Chapter 2, Section 4 of these rules and regulations. Persons may rebut this presumption by demonstrating that the used oil does not contain hazardous waste (for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in Chapter 2, Appendix H of these rules and regulations. EPA Publication SW-846, Third Edition, is available from the Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954, (202) 783-3238 (document number 955-001-00000-1).

...(ii)(A) (1.) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling arrangement as described in Section 11(e)(iii) of this Chapter, to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

...(ii)(B) (2.) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

279.10(b)(2) (B) Characteristic hazardous waste. Mixtures of used oil and hazardous waste that solely exhibits one or more of the hazardous waste characteristic identified in Chapter 2, Section 3 of these rules and regulations and mixtures of used oil and hazardous waste that is listed in Chapter 2, Section 4 of these rules and regulations solely because it exhibits one or more of the characteristics of hazardous waste identified in Chapter 2, Section 3 of these rules and regulations are subject to:

...(i) (I) Except as provided in Section 10(a)(ii)(B)(III) of this Chapter, regulation as hazardous waste under Chapter 1, Sections 1(a)-(j) and Section 3; Chapters 2 through 11; Chapter 12, Sections 1 through 8, <u>19 and 20;</u> and Chapter 13 of these rules and regulations rather than as used oil under Sections 9 through 17 of this Chapter, if the resultant mixture exhibits any characteristics of hazardous waste identified in Chapter 2, Section 3 of these rules and regulations; or

...(ii) (II) Except as specified in Section 10(a)(ii)(B)(III) of this Chapter regulation as used oil under Sections 9 through 17 of this Chapter, if the resultant mixture does not exhibit any characteristics of hazardous waste identified under Chapter 2, Section 3 of these rules and regulations.

...(iii) (III) Regulation as used oil under Sections 9 through 17 of this Chapter, if the mixture is of used oil and a waste which is hazardous solely because it exhibits the characteristic of ignitability (e.g., ignitable-only mineral spirits), provided that the resultant mixture does not exhibit the characteristic of ignitability under Chapter 2, Section 3(b) of these rules and regulations.

279.10(b)(3) (C) Conditionally exempt small quantity generator hazardous waste. Mixtures of used oil and conditionally exempt small quantity generator hazardous waste regulated under Chapter 2, Section 1(e) of these rules and regulations are subject to regulation as used oil under Sections 9 through 17 of this Chapter.

279.10(c) (iii) Materials containing or otherwise contaminated with used oil.

279.10(c)(1) (A) Except as provided in Section 10(a)(iii)(B) of this Chapter, materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed to the extent possible such that no visible signs of free-flowing oil remain in or on the material:

...(i) (I) Are not used oil and thus not subject to Sections 9 through 17 of this Chapter, and

...(ii) (II) If applicable are subject to the hazardous waste regulations of Chapter 1, Sections 1(a)-(j) and Section 3; Chapters 2 through 11; Chapter 12, Sections 1 through 8, 19 and 20; and Chapter 13 of these rules and regulations.

279.10(c)(2) (B) Materials containing or otherwise contaminated with used oil that are burned for energy recovery are subject to regulation as used oil under Sections 9 through 17 of this Chapter.

279.10(c)(3) (C) Used oil drained or removed from materials containing or otherwise contaminated with used oil is subject to regulation as used oil under Sections 9 through 17 of this Chapter.

279.10(d) (iv) Mixtures of used oil with products.

279.10(d)(1) (A) Except as provided in Section 10(a)(iv)(B) of this Chapter, mixtures of used oil and fuels or other fuel products are subject to regulation as used oil under Sections 9 through 17 of this Chapter.

279.10(d)(2) (B) Mixtures of used oil and diesel fuel mixed on-site by the generator of the used oil for use in the generator's own vehicles are not subject to Sections 9 through 17 of this Chapter once the used oil and diesel fuel have been mixed. Prior to mixing, the used oil is subject to the requirements of Section 11 of this Chapter.

279.10(e) (v) Materials derived from used oil.

279.10(e)(1) (A) Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal (e.g., re-refined lubricants) are:

...(i) (I) Not used oil and thus are not subject to Sections 9 through 17 of this Chapter, and

...(ii) (II) Not waste materials and are thus not subject to the hazardous waste regulations of Chapter 1, Sections 1(a)-(j) and Section 3; Chapters 2 through 11; Chapter 12, Sections 1 through 8, 19 and 20; and Chapter 13 of these rules and regulations as provided in Chapter 2, Section 1(c)(iii)(B) of these rules and regulations.

279.10(e)(2) (B) Materials produced from used oil that are burned for energy recovery (e.g., used oil fuels) are subject to regulation as used oil under Sections 9 through 17 of this Chapter.

279.10(e)(3) (C) Except as provided in Section 10(a)(v)(D) of this Chapter, materials derived from used oil that are disposed of or used in a manner constituting disposal are:

...(i) (I) Not used oil and thus are not subject to Sections 9 through 17 of this Chapter, and

...(ii) (II) Are waste materials and thus are subject to the hazardous waste regulations of Chapter 1, Sections 1(a)-(j) and Section 3; Chapters 2 through 11; Chapter 12, Sections 1 through 8, <u>19 and 20;</u> and Chapter 13 of these rules and regulations if the materials are listed or identified as hazardous waste.

279.10(e)(4) (D) Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products are not subject to Sections 9 through 17 of this Chapter ~~[this part]~~.

279.10(f) (vi) Wastewater. Wastewater, the discharge of which is subject to regulation under either Section 402 or Section 307(b) of the Clean Water Act (including wastewaters at facilities which have eliminated the discharge of wastewater), contaminated with de minimis quantities of used oil are not subject to the requirements of Sections 9 through 17 of this Chapter. For purposes of Section 10(a)(vi) of this Chapter, "de minimis" quantities of used oils are defined as small spills, leaks, or drippings from pumps, machinery, pipes, and other similar equipment during normal operations or small amounts of oil lost to the wastewater treatment system during washing or draining operations. This exception will not apply if the used oil is discarded as a result of abnormal manufacturing operations resulting in substantial leaks, spills, or other releases, or to used oil recovered from wastewaters.

279.10(g) (vii) Used oil introduced into crude oil pipelines or a petroleum refining facility.

279.10(g)(1) (A) Used oil mixed with crude oil or natural gas liquids (e.g., in a production separator or crude oil stock tank) for insertion into a crude oil pipeline is exempt from the requirements of Sections 9 through 17 of this Chapter. The used oil is subject to the requirements of Sections 9 through 17 of this Chapter prior to the mixing of used oil with crude oil or natural gas liquids.

279.10(g)(2) (B) Mixtures of used oil and crude oil or natural gas liquids containing less than 1% used oil that are being stored or transported to a crude oil pipeline or petroleum refining facility for insertion into the refining process at a point prior to crude distillation or catalytic cracking are exempt from the requirements of Sections 9 through 17 of this Chapter.

279.10(g)(3) (C) Used oil that is inserted into the petroleum refining facility process before crude distillation or catalytic cracking without prior mixing with crude oil is exempt from the requirements of Sections 9 through 17 of this Chapter provided that the used oil constitutes less than 1% of the crude oil feed to any petroleum refining facility process unit at any given time. Prior to insertion into the petroleum refining facility process, the used oil is subject to the requirements of Sections 9 through 17 of this Chapter.

279.10(g)(4) (D) Except as provided in Section 10(a)(vii)(E) of this Chapter, used oil that is introduced into a petroleum refining facility process after crude distillation or catalytic cracking is exempt from the requirements of Sections 9 through 17 of this Chapter only if the used oil meets the specification of Section 10(b) of this Chapter. Prior to insertion into the petroleum refining facility process, the used oil is subject to the requirements of Sections 9 through 17 of this Chapter.

279.10(g)(5) (E) Used oil that is incidentally captured by a hydrocarbon recovery system or wastewater treatment system as part of routine process operations at a petroleum refining facility and inserted into the petroleum refining facility process is exempt from the requirements of Sections 9 through 17 of this Chapter. This exemption does not extend to used oil which is intentionally introduced into a hydrocarbon recovery system (e.g., by pouring collected used oil into the waste water treatment system).

279.10(g)(6) (F) Tank bottoms from stock tanks containing exempt mixtures of used oil and crude oil or natural gas liquids are exempt from the requirements of Sections 9 through 17 of this Chapter.

279.10(h) (viii) Used oil on vessels. Used oil produced on vessels from normal shipboard operations is not subject to Sections 9 through 17 of this Chapter until it is transported ashore.

279.10(i) (ix) Used oil containing PCBs. In addition to the requirements of Sections 9 through 17 of this Chapter, marketers and burners of used oil who market used oil containing any quantifiable level of PCBs are subject to the requirements found at 40 CFR part 761.20(e).

279.11 (b) USED OIL SPECIFICATIONS Used oil burned for energy recovery, and any fuel produced from used oil by processing, blending, or other treatment, is subject to regulation under Sections 9 through 17 of this Chapter unless it is shown not to exceed any of the allowable levels of the constituents and properties in the specification shown in Table 1. Once used oil that is to be burned for energy recovery has been shown not to exceed any specification and the person making that showing complies with Sections 16(c), 16(d), and 16(e)(ii) of this Chapter, the used oil is no longer subject to Sections 9 through 17 of this Chapter.

Table 1-Used Oil Not Exceeding Any Specification Level Is Not Subject to This Part When Burned for Energy Recovery[1]

Constituent/property	Allowable level
Arsenic	5 ppm maximum.
Cadmium	2 ppm maximum.
Chromium	10 ppm maximum.
Lead	100 ppm maximum.
Flash point	100 EF minimum.
Total halogens	4,000 ppm maximum.[2]
[Note: Applicable standards for the burning of used oil containing PCBs are imposed by 40 CFR part 761.20(e).]	

FOOTNOTE: [1] The specification does not apply to mixtures of used oil and hazardous waste that continue to be regulated as hazardous waste (see Section 10(a)(ii) of this Chapter).
FOOTNOTE: [2] Used oil containing more than 1,000 ppm total halogens is presumed to be a hazardous waste under the rebuttable presumption provided under Section 10(a)(ii)(A) of this Chapter. Such used oil is subject to Section 8 of this Chapter rather than Sections 9 through 17 of this Chapter when burned for energy recovery unless the presumption of mixing can be successfully rebutted.

[Note: Applicable standards for the burning of used oil containing PCBs are imposed by 40 CFR part 761.20(e).]

279.12 (c) PROHIBITIONS

279.12(a) (i) Surface impoundment prohibition. Used oil shall not be managed in surface impoundments or waste piles unless the units are subject to regulation under Chapter 5 and either Chapter 10 or Chapter 11, Section 1 and Sections 4 through 31 or these rules and regulations.

279.12(b) (ii) Use as a dust suppressant. The use of used oil as a dust suppressant is prohibited ^.

279.12(c) (iii) Burning in particular units. Off-specification used oil fuel may be burned for energy recovery in only the following devices:

279.12(c)(1) (A) Industrial furnaces identified in Chapter 1, Section 1(f)(i) of these rules and regulations;

279.12(c)(2) (B) Boilers, as defined in Chapter 1, Section 1(f)(i) of these rules and regulations, that are identified as follows:

...(i) (I) Industrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes;

...(ii) (II) Utility boilers used to produce electric power, steam, heated or cooled air, or other gases or fluids for sale; or

...(iii) (III) Used oil-fired space heaters provided that the burner meets the provisions of Section 11(d) of this Chapter.

279.12(c)(3) (C) Hazardous waste incinerators subject to regulation under Chapter 10, Section 14 or Chapter 11, Section 16 of these rules and regulations.

279/Subpart C Section 11. STANDARDS FOR USED OIL GENERATORS

279.20 (a) APPLICABILITY

279.20(a) (i) General. Except as provided in Sections 11(a)(i)(A) through 11(a)(i)(D) of this Chapter, Section 11 of this Chapter applies to all used oil generators. A used oil generator is any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation.

279.20(a)(1) (A) Household "do-it-yourselfer" used oil generators. Household "do-it-yourselfer" used oil generators are not subject to regulation under Sections 9 through 17 of this Chapter.

279.20(a)(2) (B) Vessels. Vessels at sea or at port are not subject to Section 11 of this Chapter. For purposes of Section 11 of this Chapter, used oil produced on vessels from normal shipboard operations is considered to be generated at the time it is transported ashore. The owner or operator of the vessel and the person(s) removing or accepting used oil from the vessel are co-generators of the used oil and are both responsible for managing the waste in compliance with Section 11 of this Chapter ~~[this subpart]~~ once the used oil is transported ashore. The co-genenerators may decide among them which party will fulfill the requirements of Section 11 of this Chapter.

279.20(a)(3) (C) Diesel fuel. Mixtures of used oil and diesel fuel mixed by the generator of the used oil for use in the generator's own vehicles are not subject to Sections 9 through 17 of this Chapter once the used oil and diesel fuel have been mixed. Prior to mixing, the used oil fuel is subject to the requirements of Section 11 of this Chapter.

279.20(a)(4) (D) Farmers. Farmers who generate an average of 25 gallons per month or less of used oil from vehicles or machinery used on the farm in a calendar year are not subject to the requirements of Sections 9 through 17 of this Chapter.

279.20(b) (ii) Other applicable provisions. Used oil generators who conduct the following activities are subject to the requirements of other applicable provisions of this Sections 9 through 17 of this Chapter as indicated in Sections 11(a)(ii)(A) through 11(a)(ii)(E) of this Chapter:

279.20(b)(1) (A) Generators who transport used oil, except under the self-transport provisions of Sections 11(e)(i) and 11(e)(ii) of this Chapter, must also comply with Section 13 of this Chapter.

279.20(b)(2)(i) (B) Except as provided in Section 11(a)(ii)(B)(I) of this Chapter, generators who process or re-refine used oil must also comply with Section 14 of this Chapter.

...(ii) (I) Generators who perform the following activities are not processors provided that the used oil is generated on-site and is not being sent off-site to a burner of on- or off-specification used oil fuel.

...(ii)(A) (1.) Filtering, cleaning, or otherwise reconditioning used oil before returning it for reuse by the generator;

...(ii)(B) (2.) Separating used oil from wastewater generated on-site to make the wastewater acceptable for discharge or reuse pursuant to Section 402 or Section 307(b) of the Clean Water Act or other applicable Federal or state regulations governing the management or discharge of wastewaters;

...(ii)(C) (3.) Using oil mist collectors to remove small droplets of used oil from in-plant air to make plant air suitable for continued recirculation;

...(ii)(D) (4.) Draining or otherwise removing used oil from materials containing or otherwise contaminated with used oil in order to remove excessive oil to the extent possible pursuant to Section 10(a)(iii) of this Chapter; or

...(ii)(E) (5.) Filtering, separating or otherwise reconditioning used oil before burning it in a space heater pursuant to Section 11(d) of this Chapter.

279.20(b)(3) (C) Generators who burn off-specification used oil for energy recovery, except under the on-site space heater provisions of Section 11(d) of this Chapter, must also comply with Section 15 of this Chapter.

279.20(b)(4) (D) Generators who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section 10(b) of this Chapter must also comply with Section 16 of this Chapter.

279.20(b)(5) (E) Generators who dispose of used oil, including the use of used oil as a dust suppressant, must also comply with Section 17 of this Chapter.

279.21 (b) HAZARDOUS WASTE MIXING

279.21(a) (i) Mixtures of used oil and hazardous waste must be managed in accordance with Section 10(a)(ii) of this Chapter.

279.21(b) (ii) The rebuttable presumption for used oil of Section 10(a)(ii)(A)(II) of this Chapter applies to used oil managed by generators. Under the rebuttable presumption for used oil of Section 10(a)(ii)(A)(II) of this Chapter, used oil containing greater than 1,000 ppm total halogens is presumed to be a hazardous waste and thus must be managed as hazardous waste and not as used oil unless the presumption is rebutted. However, the rebuttable presumption does not apply to certain metalworking oils/fluids and certain used oils removed from refrigeration units.

279.22 (c) USED OIL STORAGE Used oil generators are subject to all applicable Spill Prevention, Control and Countermeasures (40 CFR part 112) in addition to the requirements of Section 11 of this Chapter. Used oil generators are also subject to the Underground Storage Tank (40 CFR part 280) standards for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Section 11 of this Chapter.

279.22(a) (i) Storage units. Used oil generators shall not store used oil in units other than tanks, containers, or units subject to regulation under Chapter 5 and either Chapter 10 or Chapter 11, Section 1 and Sections 4 through 31 of these rules and regulations.

279.22(b) (ii) Condition of units. Containers and aboveground tanks used to store used oil at generator facilities must be:

279.22(b)(1) (A) In good condition (no severe rusting, apparent structural defects or deterioration); and

279.22(b)(2) (B) Not leaking (no visible leaks).

279.22(c) (iii) Labels.

279.22(c)(1) (A) Containers and aboveground tanks used to store used oil at generator facilities must be labeled or marked clearly with the words "Used Oil."

279.22(c)(2) (B) Fill pipes used to transfer used oil into underground storage tanks at generator facilities must be labeled or marked clearly with the words "Used Oil."

79.22(d) (iv) Response to releases. Upon detection of a release of used oil to the environment that is not subject to the requirements of 40 CFR part 280, subpart F and which has occurred after the effective date of the ~~authorized used oil program for the State in which the release is located~~ recycled used oil management program in effect for the State of Wyoming if the release occurs in Wyoming, a generator must perform the following cleanup steps:

279.22(d)(1) (A) Stop the release;

279.22(d)(2) (B) Contain the released used oil;

279.22(d)(3) (C) Clean up and manage properly the released used oil and other materials; and

279.22(d)(4) (D) If necessary ~~to prevent future releases~~, repair or replace any leaking used oil storage containers or tanks prior to returning them to service.

279.23 (d) ON-SITE BURNING IN SPACE HEATERS Generators may burn used oil in used oil-fired space heaters provided that:

279.23(a) (i) The heater burns only used oil that the owner or operator generates or used oil received from household do-it-yourself used oil generators;

279.23(b) (ii) The heater is designed to have a maximum capacity of not more than 0.5 million Btu per hour; and

279.23(c) (iii) The combustion gases from the heater are vented to the ambient air.

279.24 (e) OFF-SITE SHIPMENTS Except as provided in Sections 11(e)(i) through 11(e)(iii) of this Chapter, generators must ensure that their used oil is transported only by transporters who have obtained EPA identification numbers.

279.24(a) (i) Self-transportation of small amounts to approved collection centers. Generators may transport, without an EPA identification number, used oil that is generated at the generator's site and used oil collected from household do-it-yourselfers to a used oil collection center provided that:

279.24(a)(1) (A) The generator transports the used oil in a vehicle owned by the generator or owned by an employee of the generator;

279.24(a)(2) (B) The generator transports no more than 55 gallons of used oil at any time; and

279.24(a)(3) (C) The generator transports the used oil to a used oil collection center that is registered, licensed, permitted, or recognized by a state/county/municipal government to manage used oil.

279.24(b) (ii) Self-transportation of small amounts to aggregation points owned by the generator. Generators may transport, without an EPA identification number, used oil that is generated at the generator's site to an aggregation point provided that:

279.24(b)(1) (A) The generator transports the used oil in a vehicle owned by the generator or owned by an employee of the generator;

279.24(b)(2) (B) The generator transports no more than 55 gallons of used oil at any time; and

279.24(b)(3) (C) The generator transports the used oil to an aggregation point that is owned and/or operated by the same generator.

279.24(c) (iii) Tolling arrangements. Used oil generators may arrange for used oil to be transported by a transporter without an EPA identification number if the used oil is reclaimed under a contractual agreement pursuant to which reclaimed oil is returned by the processor/re-refiner to the generator for use as a lubricant, cutting oil, or coolant. The contract (known as a "tolling arrangement") must indicate:

279.24(c)(1) (A) The type of used oil and the frequency of shipments;

279.24(c)(2) (B) That the vehicle used to transport the used oil to the processing/re-refining facility and to deliver recycled used oil back to the generator is owned and operated by the used oil processor/re-refiner; and

279.24(c)(3) (C) That reclaimed oil will be returned to the generator.

279/Subpart D Section 12. STANDARDS FOR USED OIL COLLECTION CENTERS AND AGGREGATION POINTS

279.30 (a) DO-IT-YOURSELFER USED OIL COLLECTION CENTERS

279.30(a) (i) Applicability. Section 12(a) of this Chapter ~~[This Section]~~ applies to owners or operators of all do-it-yourselfer (DIY) used oil collection centers. A DIY used oil collection center is any site or facility that accepts/aggregates and stores used oil collected only from household do-it-yourselfers.

279.30(b) (ii) DIY used oil collection center requirements. Owners or operators of all DIY used oil collection centers must comply with the generator standards in Section 11 of this Chapter ~~[subpart C of this part]~~.

279.31 (b) USED OIL COLLECTION CENTERS

279.31(a) (i) Applicability. Section 12(b) of this Chapter applies to owners or operators of used oil collection centers. A used oil collection center is any site or facility that accepts/aggregates and stores used oil collected from used oil generators regulated under Section 11 of this Chapter who bring used oil to the collection center in shipments of no more than 55 gallons under the provisions of Section 11(e)(i) of this Chapter. Used oil collection centers may also accept used oil from household do-it-yourselfers.

279.31(b) (ii) Used oil collection center requirements. Owners or operators of all used oil collection centers must:

279.31(b)(1) (A) Comply with the generator standards in Section 11 of this Chapter; and

279.31(b)(2) (B) Be registered/licensed/permitted/recognized by a state/county/municipal government to manage used oil.

279.32 (c) USED OIL AGGREGATION POINTS OWNED BY THE GENERATOR

279.32(a) (i) Applicability. Section 12(c) of this Chapter applies to owners or operators of all used oil aggregation points. A used oil aggregation point is any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gallons under the provisions of Section 11(e)(ii) of this Chapter. Used oil aggregation points may also accept used oil from household do-it-yourselfers.

279.32(b) (ii) Used oil aggregation point requirements. Owners or operators of all used oil aggregation points must comply with the generator standards in Section 11 of this Chapter.

279/Subpart E Section 13. STANDARDS FOR USED OIL TRANSPORTER AND TRANSFER FACILITIES

279.40 (a) <u>APPLICABILITY</u>

279.40(a) (i) General. Except as provided in Sections 13(a)(i)(A) through 13(a)(i)(D) of this Chapter, Section 13 of this Chapter applies to all used oil transporters. Used oil transporters are persons who transport used oil, persons who collect used oil from more than one generator and transport the collected oil, and owners and operators of used oil transfer facilities.

279.40(a)(1) (A) Section 13 of this Chapter does not apply to on-site transportation.

279.40(a)(2) (B) Section 13 of this Chapter does not apply to generators who transport shipments of used oil totaling 55 gallons or less from the generator to a used oil collection center as specified in Section 11(e)(i) of this Chapter.

279.40(a)(3) (C) Section 13 of this Chapter does not apply to generators who transport shipments of used oil totalling 55 gallons or less from the generator to a used oil aggregation point owned or operated by the same generator as specified in Section 11(e)(ii) of this Chapter.

279.40(a)(4) (D) Section 13 of this Chapter does not apply to transportation of used oil from household do-it-yourselfers to a regulated used oil generator, collection center, aggregation point, processor/re-refiner, or burner subject to the requirements of Sections 9 through 17 of this Chapter. Except as provided in Sections 13(a)(i)(A) through 13(a)(i)(C) of this Chapter, Section 13 of this Chapter does, however, apply to transportation of collected household do-it-yourselfer used oil from regulated used oil generators, collection centers, aggregation points, or other facilities where household do-it-yourselfer used oil is collected.

279.40(b) (ii) Imports and exports. Transporters who import used oil from abroad or export used oil outside of the United States are subject to the requirements of Section 13 of this Chapter from the time the used oil enters and until the time it exits the United States.

279.40(c) (iii) Trucks used to transport hazardous waste. Unless trucks previously used to transport hazardous waste are emptied as described in Chapter 2, Section 1(g) of these rules and regulations prior to transporting used oil, the used oil is considered to have been mixed with the hazardous waste and must be managed as hazardous waste unless, under the provisions of Section 10(a)(ii) of this Chapter, the hazardous waste/used oil mixture is determined not to be hazardous waste.

279.40(d) (iv) Other applicable provisions. Used oil transporters who conduct the following activities are also subject to other applicable provisions of Sections 9 through 17 of this Chapter as indicated in Sections 13(a)(iv)(A) through 13(a)(iv)(E) of this Chapter:

279.40(d)(1) (A) Transporters who generate used oil must also comply with Section 11 of this Chapter;

279.40(d)(2) (B) Transporters who process or re-refine used oil, except as provided in Section 13(b) of this Chapter, must also comply with Section 14 of this Chapter;

279.40(d)(3) (C) Transporters who burn off-specification used oil for energy recovery must also comply with Section 15 of this Chapter;

279.40(d)(4) (D) Transporters who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section 10(b) of this Chapter must also comply with Section 16 of this Chapter; and

279.40(d)(5) (E) Transporters who dispose of used oil, including the use of used oil as a dust suppressant, must also comply with Section 17 of this Chapter.

279.41 (b) RESTRICTIONS ON TRANSPORTERS WHO ARE NOT ALSO PROCESSORS OR RE-REFINERS

279.41(a) (i) Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation. However, except as provided in Section 13(b)(ii) of this Chapter, used oil transporters may not process used oil unless they also comply with the requirements for processors/re-refiners in Section 14 of this Chapter.

279.41(b) (ii) Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation), but that are not designed to produce (or make more amenable for production of) used oil derived products unless they also comply with the processor/re-refiner requirements in Section 14 of this Chapter.

279.41(c) (iii) Transporters of used oil that is removed from oil bearing electrical transformers and turbines and filtered by the transporter or at a transfer facility prior to being returned to its original use are not subject to the processor/re-refiner requirements in Section 14 of this Chapter.

279.42 (c) NOTIFICATION

279.42(a) (i) Identification numbers. Used oil transporters who have not previously complied with the notification requirements of Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d) must comply with these requirements and obtain an EPA identification number.

279.42(b) (ii) Mechanics of notification. A used oil transporter who has not received an EPA identification number may obtain one by notifying the Director of their used oil activity by submitting either:

279.42(b)(1) (A) A completed EPA Form 8700-12 (To obtain ordering information for EPA Form 8700-12 call RCRA/Superfund Hotline at 1-800-424-9346 or 703-920-9810); or

279.42(b)(2) (B) A letter requesting an EPA identification number. Call RCRA/Superfund Hotline to determine where to send a letter requesting an EPA identification number. The letter should include the following information:

...(i) (I) Transporter company name;

...(ii) (II) Owner of the transporter company;

...(iii) (III) Mailing address for the transporter;

...(iv) (IV) Name and telephone number for the transporter point of contact;

...(v) (V) Type of transport activity (i.e., transport only, transport and transfer facility, transfer facility only);

...(vi) (VI) Location of all transfer facilities at which used oil is stored;

...(vii) (VII) Name and telephone number for a contact at each transfer facility.

279.43 (d) USED OIL TRANSPORTATION

279.43(a) (i) Deliveries. A used oil transporter must deliver all used oil received to:

279.43(a)(1) (A) Another used oil transporter, provided that the transporter has obtained an EPA identification number;

279.43(a)(2) (B) A used oil processing/re-refining facility who has obtained an EPA identification number;

279.43(a)(3) (C) An off-specification used oil burner facility who has obtained an EPA identification number; or

279.43(a)(4) (D) An on-specification used oil burner facility.

279.43(b) (ii) DOT Requirements. Used oil transporters must comply with all applicable requirements under the U.S. Department of Transportation regulations in 49 CFR parts 171 through 180. Persons transporting used oil that meets the definition of a hazardous material in 49 CFR part 171.8 must comply with all applicable regulations in 49 CFR parts 171 through 180.

279.43(c) (iii) Used oil discharges.

279.43(c)(1) (A) In the event of a discharge of used oil during transportation, the transporter must take appropriate immediate action to protect human health and the environment (e.g., notify local authorities, dike the discharge area).

279.43(c)(2) (B) If a discharge of used oil occurs during transportation and an official (State or local government or a Federal Agency) acting within the scope of official responsibilities determines that immediate removal of the used oil is necessary to protect human health or the environment, that official may authorize the removal of the used oil by transporters who do not have EPA identification numbers.

279.43(c)(3) (C) An air, rail, highway, or water transporter who has discharged used oil must:

...(i) (I) Give notice, if required by 49 CFR 171.15 to the National Response Center (800-424-8802 or 202-426-2675); and

...(ii) (II) Report in writing as required by 49 CFR 171.16 to the Director, Office of Hazardous Materials Regulations, Materials Transportation Bureau, Department of Transportation, Washington, DC 20590.

279.43(c)(4) (D) A water transporter who has discharged used oil must give notice as required by 33 CFR part 153.203.

279.43(c)(5) (E) A transporter must clean up any used oil discharged that occurs during transportation or take such action as may be required or approved by federal, state, or local officials so that the used oil discharge no longer presents a hazard to human health or the environment.

279.44 (e) REBUTTABLE PRESUMPTION FOR USED OIL

279.44(a) (i) To ensure that used oil is not a hazardous waste under the rebuttable presumption of Section 10(a)(ii)(A)(II) of this Chapter, the used oil transporter must determine whether the total halogen content of used oil being transported or stored at a transfer facility is above or below 1,000 ppm.

279.44(b) (ii) The transporter must make this determination by:

279.44(b)(1) (A) Testing the used oil; or

279.44(b)(2) (B) Applying knowledge of the halogen content of the used oil in light of the materials or processes used.

279.44(c) (iii) If the used oil contains greater than or equal to 1,000 ppm total halogens, it is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Chapter 2, Section 4 of these rules and regulations. The owner or operator may rebut the presumption by demonstrating that the used oil does not contain hazardous waste (for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in Chapter 2, Appendix H of these rules and regulations). EPA Publication SW-846, Third Edition, is available from the Government Printing Office, Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954. (202) 783-3238 (document number 955-001-00000-1).

279.44(c)(1) (A) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling arrangement as described in Section 11(e)(iii) of this Chapter, to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

279.44(c)(2) (B) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units if the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

279.44(d) (iv) Record retention. Records of analyses conducted or information used to comply with Sections 13(e)(i), and 13(e)(ii), and 13(e)(iii) of this Chapter must be maintained by the transporter for at least 3 years.

279.45 (f) USED OIL STORAGE AT TRANSFER FACILITIES Used oil transporters are subject to all applicable Spill Prevention, Control and Countermeasures (40 CFR part 112) in addition to the requirements of Section 13 of this Chapter. Used oil transporters are also subject to the Underground Storage Tank (40 CFR part 280) standards for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Chapter 13 of this Chapter.

279.45(a) (i) Applicability. Section 13(f) of this Chapter applies to used oil transfer facilities. Used oil transfer facilities are transportation related facilities including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 hours during the normal course of transportation and not longer than 35 days. Transfer facilities that store used oil for more than 35 days are subject to regulation under Section 14 of this Chapter.

279.45(b) (ii) Storage units. Owners or operators of used oil transfer facilities may not store used oil in units other than tanks, containers, or units subject to regulation under Chapter 5 and either Chapter 10 or Chapter 11, Section 1 and Sections 4 through 31 of these rules and regulations.

279.45(c) (iii) Condition of units. Containers and aboveground tanks used to store used oil at transfer facilities must be:

279.45(c)(1) (A) In good condition (no severe rusting, apparent structural defects or deterioration); and

279.45(c)(2) (B) Not leaking (no visible leaks).

279.45(d) (iv) Secondary containment for containers. Containers used to store used oil at transfer facilities must be equipped with a secondary containment system.

279.45(d)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dikes, berms, or retaining walls; or

...(iii) (III) An equivalent secondary containment system.

279.45(d)(2) (B) The entire containment system, including walls and floors, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.45(e) (v) Secondary containment for existing aboveground tanks. Existing aboveground tanks used to store used oil at transfer facilities must be equipped with a secondary containment system.

279.45(e)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall except areas where existing portions of the tank meet the ground; or

...(iii) (III) An equivalent secondary containment system.

279.45(e)(2) (B) The entire containment system, including walls and floors, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.45(f) (vi) Secondary containment for new aboveground tanks. New aboveground tanks used to store used oil at transfer facilities must be equipped with a secondary containment system.

279.45(f)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall; or

...(iii) (III) An equivalent secondary containment system.

279.45(f)(2) (B) The entire containment system, including walls and floors, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.45(g) (vii) Labels.

279.45(g)(1) (A) Containers and aboveground tanks used to store used oil at transfer facilities must be labeled or marked clearly with the words "Used Oil."

279.45(g)(2) (B) Fill pipes used to transfer used oil into underground storage tanks at transfer facilities must be labeled or marked clearly with the words "Used Oil."

279.45(h) (viii)Response to releases. Upon detection of a release of used oil to the environment that is not subject to the requirements of 40 CFR part 280, subpart F and which has occurred after the effective date of the ~~authorized used oil program for~~ recycled used oil management program in effect in the State of Wyoming if the release occurs in Wyoming, the owner/operator of a transfer facility must perform the following cleanup steps:

279.45(h)(1) (A) Stop the release;

279.45(h)(2) (B) Contain the released used oil;

279.45(h)(3) (C) Clean up and manage properly the released used oil and other materials; and

279.45(h)(4) (D) If necessary, repair or replace any leaking used oil storage containers or tanks prior to returning them to service.

279.46 (g) TRACKING

279.46(a) (i) Acceptance. Used oil transporters must keep a record of each used oil shipment accepted for transport. Records for each shipment must include:

279.46(a)(1) (A) The name and address of the generator, transporter, or processor/re-refiner who provided the used oil for transport;

279.43(a)(2) (B) The EPA identification number (if applicable) of the generator, transporter, or processor/re-refiner who provided the used oil for transport;

279.46(a)(3) (C) The quantity of used oil accepted;

279.46(a)(4) (D) The date of acceptance; and

279.46(a)(5)(i) (E) Except as provided in Section 13(g)(i)(E)(II) of this Chapter, the signature, dated upon receipt of the used oil, of a representative of the generator, transporter, or processor/re-refiner who provided the used oil for transport.

...(ii) (I) Intermediate rail transporters are not required to sign the record of acceptance.

279.46(b) (ii) Deliveries. Used oil transporters must keep a record of each shipment of used oil that is delivered to another used oil transporter, or to a used oil burner, processor/re-refiner, or disposal facility. Records of each delivery must include:

279.46(b)(1) (A) The name and address of the receiving facility or transporter;

279.46(b)(2) (B) The EPA identification number of the receiving facility or transporter;

279.46(b)(3) (C) The quantity of used oil delivered;

279.46(b)(4) (D) The date of delivery;

279.46(b)(5)(i) (E) Except as provided in Section 13(g)(ii)(E)(II) of this Chapter, the signature, dated upon receipt of the used oil, of a representative of the receiving facility or transporter.

...(ii) (I) Intermediate rail transporters are not required to sign the record of delivery.

279.46(c) (iii) Exports of used oil. Used oil transporters must maintain the records described in Sections 13(g)(ii)(A) through 13(g)(ii)(D) of this Chapter for each shipment of used oil exported to any foreign country.

279.46(d) (iv) Record retention. The records described in Sections 13(g)(i), 13(g)(ii) and 13(g)(iii) of this Chapter must be maintained for at least three years.

279.47 (h) MANAGEMENT OF RESIDUES Transporters who generate residues from the storage or transport of used oil must manage the residues as specified in Section 10(a)(v) of this Chapter.

279/Subpart F Section 14. STANDARDS FOR USED OIL PROCESSORS AND RE-REFINERS

279.50 (a) APPLICABILITY

279.50(a) (i) The requirements of Section 14 of this Chapter apply to owners and operators of facilities that process used oil. Processing means chemical or physical operations designed to produce from used oil, or to make used oil more amenable for production of, fuel oils, lubricants, or other used oil-derived products. Processing includes, but is not limited to: blending used oil with virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining. The requirements of Section 14 of this Chapter do not apply to:

279.50(a)(1) (A) Transporters that conduct incidental processing operations that occur during the normal course of transportation as provided in Section 13(b) of this Chapter; or

279.50(a)(2) (B) Burners that conduct incidental processing operations that occur during the normal course of used oil management prior to burning as provided in Section 15(b)(ii) of this Chapter.

279.50(b) (ii) Other applicable provisions. Used oil processors/re-refiners who conduct the following activities are also subject to the requirements of other applicable provisions of this part as indicated in Sections 14(a)(ii)(A) through 14(a)(ii)(E) of this Chapter.

279.50(b)(1) (A) Processors/re-refiners who generate used oil must also comply with Section 11 of this Chapter ~~[subpart C of this part]~~;

279.50(b)(2) (B) Processors/re-refiners who transport used oil must also comply with Section 13 of this Chapter ~~[subpart E of this part]~~;

279.50(b)(3) (C) Except as provided in Sections 14(a)(ii)(C)(I) and 14(a)(ii)(C)(II) of this Chapter, processors/re-refiners who burn off-specification used oil for energy recovery must also comply with Section 15 of this Chapter. Processor/re-refiners burning used oil for energy recovery under the following conditions are not subject to Section 15 of this Chapter:

...(i) (I) The used oil is burned in an on-site space heater that meets the requirements of Section 11(d) of this Chapter; or

...(ii) (II) The used oil is burned for purposes of processing used oil, which is considered burning incidentally to used oil processing;

279.50(b)(4) (D) Processors/re-refiners who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section 10(b) of this Chapter must also comply with Section 16 of this Chapter; and

279.50(b)(5) (E) Processors/re-refiners who dispose of used oil, including the use of used oil as a dust suppressant, also must comply with Section 17 of this Chapter.

279.51 (b) NOTIFICATION

279.51(a) (i) Identification numbers. Used oil processors and re-refiners who have not previously complied with the notification requirements of Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d) must comply with these requirements and obtain an EPA identification number.

279.51(b) (ii) Mechanics of notification. A used oil processor or re-refiner who has not received an EPA identification number may obtain one by notifying the Director of their used oil activity by submitting either:

279.51(a)(1) (A) A completed EPA Form 8700-12 (To obtain EPA Form 8700-12 call RCRA/Superfund Hotline at 1-800-424-9346 or 703-920-9810); or

279.51(a)(2) (B) A letter requesting an EPA identification number. Call RCRA/Superfund Hotline to determine where to send a letter requesting an EPA identification number. The letter should include the following information:

...(i) (I) Processor or re-refiner company name;

...(ii) (II) Owner of the processor or re-refiner company;

...(iii) (III) Mailing address for the processor or re-refiner;

...(iv) (IV) Name and telephone number for the processor or re-refiner point of contact;

...(v) (V) Type of used oil activity (i.e., process only, process and re-refine);

...(vi) (VI) Location of the processor or re-refiner facility.

279.52 (c) GENERAL FACILITY STANDARDS

279.52(a) (i) Preparedness and prevention. Owners and operators of used oil processors and re-refiners facilities must comply with the following requirements:

279.52(a)(1) (A) Maintenance and operation of facility. Facilities must be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of used oil to air, soil, or surface water which could threaten human health or the environment.

279.52(a)(2) (B) Required equipment. All facilities must be equipped with the following, unless none of the hazards posed by used oil handled at the facility could require a particular kind of equipment specified in Sections 14(c)(i)(B)(I) through 14(c)(i)(B)(IV) of this Chapter:

...(i) (I) An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;

...(ii) (II) A device, such as a telephone (immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;

...(iii) (III) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment and decontamination equipment; and

...(iv) (IV) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

279.52(a)(3) (C) Testing and maintenance of equipment. All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

279.52(a)(4) (D) Access to communications or alarm system.

...(i) (I) Whenever used oil is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, unless such a device is not required in Section 14(c)(i)(B) of this Chapter.

...(ii) (II) If there is ever just one employee on the premises while the facility is operating, the employee must have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning external emergency assistance, unless such a device is not required in Section 14(c)(i)(B) of this Chapter.

279.52(a)(5) (E) Required aisle space. The owner or operator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, unless aisle space is not needed for any of these purposes.

279.52(a)(6) (F) Arrangements with local authorities.

...(i) (I) The owner or operator must attempt to make the following arrangements, as appropriate for the type of used oil handled at the facility and the potential need for the services of these organizations:

...(i)(A) (1.) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of used oil handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;

...(i)(B) (2.) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

...(i)(C) (3.) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

...(i)(D) (4.) Arrangements to familiarize local hospitals with the properties of used oil handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

...(ii) (II) Where State or local authorities decline to enter into such arrangements, the owner or operator must document the refusal in the operating record.

279.52(b) (ii) Contingency plan and emergency procedures. Owners and operators of used oil processors and re-refiners facilities must comply with the following requirements:

279.52(b)(1) (A) Purpose and implementation of contingency plan.

...(i) (I) Each owner or operator must have a contingency plan for the facility. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of used oil to air, soil, or surface water.

...(ii) (II) The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of used oil which could threaten human health or the environment.

279.52(b)(2) (B) Content of contingency plan.

...(i) (I) The contingency plan must describe the actions facility personnel must take to comply with Sections 14(c)(ii)(A) and (F) of this Chapter in response to fires, explosions, or any unplanned sudden or non-sudden release of used oil to air, soil, or surface water at the facility.

...(ii) (II) If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR part 112, or 40 CFR part 1510, or some other emergency or contingency plan, the owner or operator need only amend that plan to incorporate used oil management provisions that are sufficient to comply with the requirements of Sections 9 through 17 of this Chapter.

...(iii) (III) The plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to Section 14(c)(i)(F) of this Chapter.

...(iv) (IV) The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see Section 14(c)(ii)(E) of this Chapter), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates.

...(v) (V) The plan must include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.

...(vi) (VI) The plan must include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of used oil or fires).

279.52(b)(3) (C) Copies of contingency plan. A copy of the contingency plan and all revisions to the plan must be:

...(i) (I) Maintained at the facility; and

...(ii) (II) Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

279.52(b)(4) (D) Amendment of contingency plan. The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

...(i) (I) Applicable regulations are revised;

...(ii) (II) The plan fails in an emergency;

...(iii) (III) The facility changes--in its design, construction, operation, maintenance, or other circumstances--in a way that materially increases the potential for fires, explosions, or releases of used oil, or changes the response necessary in an emergency;

...(iv) (IV) The list of emergency coordinators changes; or

...(v) (V) The list of emergency equipment changes.

279.52(b)(5) (E) Emergency coordinator. At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristic of used oil handled, the location of all records within the facility, and facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

Guidance: The emergency coordinator's responsibilities are more fully spelled out in Section 14(c)(ii)(F) of this Chapter. Applicable responsibilities for the emergency coordinator vary, depending on factors such as type and variety of used oil handled by the facility, and type and complexity of the facility.

279.52(b)(6) (F) Emergency procedures.

...(i) (I) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or the designee when the emergency coordinator is on call) must immediately:

...(i)(A) (1.) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

...(i)(B) (2.) Notify appropriate State or local agencies with designated response roles if their help is needed.

...(ii) (II) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and a real extent of any released materials. The emergency coordinator may do this by observation or review of facility records of manifests and, if necessary, by chemical analysts.

...(iii) (III) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water of chemical agents used to control fire and heat-induced explosions).

...(iv) (IV) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, the emergency coordinator must report his or her findings as follows:

...(iv)(A) (1.) If his or her assessment indicated that evacuation of local areas may be advisable, the emergency coordinator must immediately notify appropriate local authorities. The emergency coordinator must be available to help appropriate officials decide whether local areas should be evacuated; and

...(iv)(B) (2.) The emergency coordinator must immediately notify either the government official designated as the on-scene coordinator for the geographical area (in the applicable regional contingency plan under 40 CFR part 1510 of this title), or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

...(iv)(B)(1) a. Name and telephone number of reporter;

...(iv)(B)(2) b. Name and address of facility;

...(iv)(B)(3) c. Time and type of incident (e.g., release, fire);

...(iv)(B)(4) d. Name and quantity of material(s) involved, to the extent known;

...(iv)(B)(5) e. The extent of injuries, if any; and

...(iv)(B)(6) f. The possible hazards to human health, or the environment, outside the facility.

...(v) (V) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other used oil or hazardous waste at the facility. These measures must include, where applicable, stopping processes and operation, collecting and containing released used oil, and removing or isolating containers.

...(vi) (VI) If the facility stops operation in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

...(vii) (VII) Immediately after an emergency, the emergency coordinator must provide for recycling, storing, or disposing of recovered used oil, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

...(viii) (VIII) The emergency coordinator must ensure that, in the affected area(s) of the facility:

...(viii)(A) (1.) No waste or used oil that may be incompatible with the released material is recycled, treated, stored, or disposed of until cleanup procedures are completed; and

...(viii)(B) (2.) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

...(viii)(C) (3.) The owner or operator must notify the Director, and appropriate State and local authorities that the facility is in compliance with Sections 14(c)(ii)(F)(VIII)(1.) and (2.) of this Chapter before operations are resumed in the affected area(s) of the facility.

...(ix) (IX) The owner or operator must note in the operating record the time, date and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, the owner or operator must submit a written report on the incident to the Director. The report must include:

...(ix)(A) (1.) Name, address, and telephone number of the owner or operator;

...(ix)(B) (2.) Name, address, and telephone number of the facility;

...(ix)(C) (3.) Date, time, and type of incident (e.g., fire, explosion);

...(ix)(D) (4.) Name and quantity of material(s) involved;

...(ix)(E) (5.) The extent of injuries, if any;

...(ix)(F) (6.) An assessment of actual or potential hazards to human health or the environment, where this is applicable;

...(ix)(G) (7.) Estimated quantity and disposition of recovered material that resulted from the incident.

279.53 (d) REBUTTABLE PRESUMPTION FOR USED OIL

279.53(a) (i) To ensure that used oil managed at a processing/re-refining facility is not hazardous waste under the rebuttable presumption of Section 10(a)(ii)(A)(II) of this Chapter, the owner or operator of a used oil processing/re-refining facility must determine whether the total halogen content of used oil managed at the facility is above or below 1,000 ppm.

279.53(b) (ii) The owner or operator must make this determination by:

279.53(b)(1) (A) Testing the used oil; or

279.53(b)(2) (B) Applying knowledge of the halogen content of the used oil in light of the materials or processes used.

279.53(c) (iii) If the used oil contains greater than or equal to 1,000 ppm total halogens, it is presumed to be a hazardous waste because it has been mixed with halogenated hazardous waste listed in Chapter 2, Section 4 of these rules and regulations. The owner or operator may rebut the presumption by demonstrating that the used oil does not contain hazardous waste (for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in Chapter 2, Appendix H of these rules and regulations). EPA Publication SW-846, Third Edition, is available from the Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh PA 15250-7954, (202) 783-3238 (document number 955-001-00000-1).

279.53(c)(1) (A) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling agreement, to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

279.53(c)(2) (B) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

279.54 (e) USED OIL MANAGEMENT Used oil processor/re-refiners are subject to all applicable Spill Prevention, Control and Countermeasures (40 CFR part 112) in addition to the requirements of Section 14 of this Chapter. Used oil processors/re-refiners are also subject to the Underground Storage Tank (40 CFR part 280) standards for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Section 14 of this Chapter.

279.54(a) (i) Management units. Used oil processors/re-refiners may not store used oil in units other than tanks, containers, or units subject to regulation under Chapter 5 and either Chapter 10 or Chapter 11, Section 1 and Sections 4 through 31 of these rules and regulations.

279.54(b) (ii) Condition of units. Containers and aboveground tanks used to store or process used oil at processing and re-refining facilities must be:

279.54(b)(1) (A) In good condition (no severe rusting, apparent structural defects or deterioration); and

279.54(b)(2) (B) Not leaking (no visible leaks).

279.54(c) (iii) Secondary containment for containers. Containers used to store or process used oil at processing and re-refining facilities must be equipped with a secondary containment system.

279.54(c)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall; or

...(iii) (III) An equivalent secondary containment system.

279.54(c)(2) (B) The entire containment system, including walls and floor, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.54(d) (iv) Secondary containment for existing aboveground tanks. Existing aboveground tanks used to store or process used oil at processing and re-refining facilities must be equipped with a secondary containment system.

279.54(d)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall except areas where existing portions of the tank meet the ground; or

...(iii) (III) An equivalent secondary containment system.

279.54(d)(2) (B) The entire containment system, including walls and floor, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.54(e) (v) Secondary containment for new aboveground tanks. New aboveground tanks used to store or process used oil at processing and re-refining facilities must be equipped with a secondary containment system.

279.54(e)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall; or

...(iii) (III) An equivalent secondary containment system.

279.54(e)(2) (B) The entire containment system, including walls and floor, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.54(f) (vi) Labels.

279.54(f)(1) (A) Containers and aboveground tanks used to store or process used oil at processing and re-refining facilities must be labeled or marked clearly with the words "Used Oil."

279.54(f)(2) (B) Fill pipes used to transfer used oil into underground storage tanks at processing and re-refining facilities must be labeled or marked clearly with the words "Used Oil."

279.54(g) (vii) Response to releases. Upon detection of a release of used oil to the environment that is not subject to the requirements of 40 CFR 280, subpart F and which has occurred after the effective date of the ~~authorized used oil program~~ recycled used oil management program in effect for the State of Wyoming if the release occurs in Wyoming, an owner/operator must perform the following cleanup steps:

279.54(g)(1) (A) Stop the release;

279.54(g)(2) (B) Contain the released used oil;

279.54(g)(3) (C) Clean up and manage properly the released used oil and other materials; and

279.54(g)(4) (D) If necessary, repair or replace any leaking used oil storage containers or tanks prior to returning them to service.

279.54(h) (viii) Closure.

279.54(h)(1) (A) Aboveground tanks. Owners and operators who store or process used oil in aboveground tanks must comply with the following requirements:

...(i) (I) At closure of a tank system, the owner or operator must remove or decontaminate used oil residues in tanks, contaminated containment system components, contaminated soils, and structures and equipment contaminated with used oil, and manage them as hazardous waste, unless the materials are not hazardous waste under these rules and regulations.

...(ii) (II) If the owner or operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required in Section 14(e)(viii)(A)(I) of this Chapter, then the owner or operator must close the tank system and perform post-closure care in accordance with the closure and post-closure care requirements that apply to hazardous waste landfills (Chapter 11, Section 15(k) of these rules and regulations) (40 CFR part 265.310).

279.54(h)(2) (B) Containers. Owners and operators who store used oil in containers must comply with the following requirements:

...(i) (I) At closure, containers holding used oils or residues of used oil must be removed from the site;

...(ii) (II) The owner or operator must remove or decontaminate used oil residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with used oil, and manage them as hazardous waste, unless the materials are not hazardous waste under Chapter 2 of these rules and regulations.

279.55 (f) ANALYSIS PLAN Owners or operators of used oil processing and re-refining facilities must develop and follow a written analysis plan describing the procedures that will be used to comply with the analysis requirements of Section 14(d) of this Chapter and, if applicable, Section 16(c) of this Chapter. The owner or operator must keep the plan at the facility.

279.55(a) (i) Rebuttable presumption for used oil in Section 14(d) of this Chapter. At a minimum, the plan must specify the following:

279.55(a)(1) (A) Whether sample analyses or knowledge of the halogen content of the used oil will be used to make this determination.

279.55(a)(2) (B) If sample analyses are used to make this determination:

...(i) (I) The sampling method used to obtain representative samples to be analyzed. A representative sample may be obtained using either:

...(i)(A) (1.) One of the sampling methods in Chapter 2, Appendix A of these rules and regulations; or

...(i)(B) (2.) A method shown to be equivalent under Chapter 1, Sections 3(a) and 3(b) of these rules and regulations;

...(ii) (II) The frequency of sampling to be performed, and whether the analysis will be performed on-site or off-site; and

...(iii) (III) The methods used to analyze used oil for the parameters specified in Section 14(d) of this Chapter; and

279.55(a)(3) (C) The type of information that will be used to determine the halogen content of the used oil.

279.55(b) (ii) On-specification used oil fuel in Section 16(c) of this Chapter. At a minimum, the plan must specify the following if Section 16(c) of this Chapter is applicable:

279.55(b)(1) (A) Whether sample analyses or other information will be used to make this determination;

279.55(b)(2) (B) If sample analyses are used to make this determination:

...(i) (I) The sampling method used to obtain representative samples to be analyzed. A representative sample may be obtained using either:

...(i)(A) (1.) One of the sampling methods in Chapter 2, Appendix A of these rules and regulations; or

...(i)(B) (2.) A method shown to be equivalent under Chapter 1, Sections 3(a) and 3(b) of these rules and regulations;

...(ii) (II) Whether used oil will be sampled and analyzed prior to or after any processing/re-refining;

...(iii) (III) The frequency of sampling to be performed, and whether the analysis will be performed on-site or off-site; and

...(iv) (IV) The methods used to analyze used oil for the parameters specified in Section 16(c) of this Chapter; and

279.55(b)(3) (C) The type of information that will be used to make the on-specification used oil fuel determination.

279.56 (g) TRACKING

279.56(a) (i) Acceptance. Used oil processors/re-refiners must keep a record of each used oil shipment accepted for processing/re-refining. These records may take the form of a log, invoice, manifest, bill of lading or other shipping documents. Records for each shipment must include the following information:

279.56(a)(1) (A) The name and address of the transporter who delivered the used oil to the processor/re-refiner;

279.56(a)(2) (B) The name and address of the generator or processor/re-refining from whom the used oil was sent for processing/re-refining;

279.56(a)(3) (C) The EPA identification number of the transporter who delivered the used oil to the processor/re-refiner;

279.56(a)(4) (D) The EPA identification number (if applicable) of the generator or processor/re-refiner from whom the used oil was sent for processing/re-refining;

279.56(a)(5) (E) The quantity of used oil accepted; and

279.56(a)(6) (F) The date of acceptance.

279.56(b) (ii) Delivery. Used oil processor/re-refiners must keep a record of each shipment of used oil that is shipped to a used oil burner, processor/ re-refiner, or disposal facility. These records may take the form of a log, invoice, manifest, bill of lading or other shipping documents. Records for each shipment must include the following information:

279.56(b)(1) (A) The name and address of the transporter who delivers the used oil to the burner, processor/re-refiner or disposal facility;

279.56(b)(2) (B) The name and address of the burner, processor/re-refiner or disposal facility who will receive the used oil;

279.56(b)(3) (C) The EPA identification number of the transporter who delivers the used oil to the burner, processor/re-refiner or disposal facility;

279.56(b)(4) (D) The EPA identification number of the burner, processor/re-refiner, or disposal facility who will receive the used oil;

279.56(b)(5) (E) The quantity of used oil shipped; and

279.56(b)(6) (F) The date of shipment.

279.56(c) (iii) Record retention. The records described in Sections 14(g)(i) and 14(g)(ii) of this Chapter must be maintained for at least three years.

279.57 (h) OPERATING RECORD AND REPORTING

279.57(a) (i) Operating record.

279.57(a)(1) (A) The owner or operator must keep a written operating record at the facility.

279.57(a)(2) (B) The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility;

...(i) (I) Records and results of used oil analyses performed as described in the analysis plan required under Section 14(f) of this Chapter; and

...(ii) (II) Summary reports and details of all incidents that require implementation of the contingency plan an specified in Section 14(c)(ii) of this Chapter.

279.57(b) (ii) Reporting. A used oil processor/re-refiner must report to the Director, in the form of a letter, on a biennial basis (by March 1 of each even numbered year), the following information concerning used oil activities during the previous calendar year;

279.57(b)(1) (A) The EPA identification number, name, and address of the processor/re-refiner;

279.57(b)(2) (B) The calendar year covered by the report; and

279.57(b)(3) (C) The quantities of used oil accepted for processing/re-refining and the manner in which the used oil is processed/re-refined, including the specific processes employed.

279.58 (i) OFF-SITE SHIPMENTS OF USED OIL Used oil processors/re-refiners who initiate shipments of used oil off-site must ship the used oil using a used oil transporter who has obtained an EPA identification number.

279.59 (j) MANAGEMENT OF RESIDUES Owners and operators who generate residues from the storage, processing, or re-fining of used oil must manage the residues as specified in Section 10(a)(v) of this Chapter.

279/Subpart G Section 15. STANDARDS FOR USED OIL BURNERS WHO BURN OFF-SPECIFICATION USED OIL FOR ENERGY RECOVERY

279.60 (a) APPLICABILITY

279.60(a) (i) General. The requirements of Section 15 of this Chapter apply to used oil burners except as specified in Sections 15(a)(i)(A) and 15(a)(i)(B) of this Chapter. A used oil burner is a facility where used oil not meeting the specification requirements in Section 10(b) of this Chapter is burned for energy recovery in devices identified in Section 15(b)(i) of this Chapter. Facilities burning used oil for energy recovery under the following conditions are not subject to Section 15 of this Chapter:

279.60(a)(1) (A) The used oil is burned by the generator in an on-site space heater under the provisions of Section 11(d) of this Chapter; or

279.60(a)(2) (B) The used oil is burned by a processor/re-refiner for purposes of processing used oil, which is considered burning incidentally to used oil processing.

279.60(b) (ii) Other applicable provisions. Used oil burners who conduct the following activities are also subject to the requirements of other applicable provisions of Sections 9 through 17 of this Chapter as indicated below.

279.60(b)(1) (A) Burners who generate used oil must also comply with Section 11 of this Chapter;

279.60(b)(2) (B) Burners who transport used oil must also comply with Section 13 of this Chapter;

279.60(b)(3) (C) Except as provided in Section 15(b)(ii) of this Chapter, burners who process or re-refine used oil must also comply with Section 14 of this Chapter;

279.60(b)(4) (D) Burners who direct shipments of off-specification used oil from their facility to a used oil burner or first claim that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section 10(b) of this Chapter must also comply with Section 16 of this Chapter; and

279.60(b)(5) (E) Burners who dispose of used oil, including the use of used oil as a dust suppressant, must comply with Section 17 of this Chapter.

279.60(c) (iii) Specification fuel. Section 15 of this Chapter does not apply to persons burning used oil that meets the used oil fuel specification of Section 10(b) of this Chapter, provided that the burner complies with the requirements of Section 16 of this Chapter.

279.61 (b) RESTRICTIONS ON BURNING

279.61(a) (i) Off-specification used oil fuel may be burned for energy recovery in only the following devices:

279.61(a)(1) (A) Industrial furnaces identified in Chapter 1, Section 1(f)(i) of these rules and regulations;

279.61(a)(2) (B) Boilers, as defined in Chapter 1, Section 1(f)(i) of these rules and regulations, that are identified as follows:

...(i) (I) Industrial boilers located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes;

...(ii) (II) Utility boilers used to produce electric power, steam, heated or cooled air, or other gases or fluids for sale; or

...(iii) (III) Used oil-fired space heaters provided that the burner meets the provisions of Section 11(d) of this Chapter; or

279.61(a)(3) (C) Hazardous waste incinerators subject to regulation under Chapter 10, Section 14 or Chapter 11, Section 16 of these rules and regulations.

279.61(b)(1) (ii) With the following exception, used oil burners may not process used oil unless they also comply with the requirements of Section 14 of this Chapter.

279.61(b)(2) (A) Used oil burners may aggregate off-specification used oil with virgin oil or on-specification used oil for purposes of burning, but may not aggregate for purposes of producing on-specification used oil.

279.62 (c) NOTIFICATION

279.62(a) (i) Identification numbers. Used oil burners which have not previously complied with the notification requirements of Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d) must comply with these requirements and obtain an EPA identification number.

279.62(b) (ii) Mechanics of notification. A used oil burner who has not received an EPA identification number may obtain one by notifying the Director of their used oil activity by submitting either:

279.62(b)(1) (A) A completed EPA Form 8700-12 (To obtain EPA Form 8700-12 call RCRA/Superfund Hotline at 1-800-424-9346 or 703-920-9810); or

279.61(b)(2) (B) A letter requesting an EPA identification number. Call the RCRA/Superfund Hotline to determine where to send a letter requesting an EPA identification number. The letter should include the following information:

...(i) (I) Burner company name;

...(ii) (II) Owner of the burner company;

...(iii) (III) Mailing address for the burner;

...(iv) (IV) Name and telephone number for the burner point of contact;

...(v) (V) Type of used oil activity; and

...(vi) (VI) Location of the burner facility.

279.63 (d) REBUTTABLE PRESUMPTION FOR USED OIL

279.63(a) (i) To ensure that used oil managed at a used oil burner facility is not hazardous waste under the rebuttable presumption of Section 10(a)(ii)(A)(II) of this Chapter, a used oil burner must determine whether the total halogen content of used oil managed at the facility is above or below 1,000 ppm.

279.63(b) (ii) The used oil burner must determine if the used oil contains above or below 1,000 ppm total halogens by:

279.63(b)(1) (A) Testing the used oil;

279.63(b)(2) (B) Applying knowledge of the halogen content of the used oil in light of the materials or processes used; or

279.63(b)(3) (C) If the used oil has been received from a processor/refiner subject to regulation under Section 14 of this Chapter, using information provided by the processor/re-refiner.

279.63(c) (iii) If the used oil contains greater than or equal to 1,000 ppm total halogens, it is presumed to be a hazardous waste/because it has been mixed with halogenated hazardous waste listed in Chapter 2, Section 4 of these rules and regulations. The owner or operator may rebut the presumption by demonstrating that the used oil does not contain hazardous waste (for example, by using an analytical method from SW-846, Edition III, to show that the used oil does not contain significant concentrations of halogenated hazardous constituents listed in Chapter 2, Appendix H of these rules and regulations). EPA Publication SW-846, Third Edition, is available from the Government Printing Office, Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954. 202-783-3238 (document number 955-001-00000-1).

279.63(c)(1) (A) The rebuttable presumption does not apply to metalworking oils/fluids containing chlorinated paraffins, if they are processed, through a tolling arrangement as described in Section 11(e)(iii) of this Chapter, to reclaim metalworking oils/fluids. The presumption does apply to metalworking oils/fluids if such oils/fluids are recycled in any other manner, or disposed.

279.63(c)(2) (B) The rebuttable presumption does not apply to used oils contaminated with chlorofluorocarbons (CFCs) removed from refrigeration units where the CFCs are destined for reclamation. The rebuttable presumption does apply to used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units.

279.63(d) (iv) Record retention. Records of analyses conducted or information used to comply with Sections 15(d)(i), 15(d)(ii), and 15(d)(iii) of this Chapter must be maintained by the burner for at least 3 years.

279.64 (e) USED OIL STORAGE Used oil burners are subject to all applicable Spill Prevention, Control and Countermeasures (40 CFR part 112) in addition to the requirements of Sections 9 through 17 of this Chapter. Used oil burners are also subject to the Underground Storage Tank (40 CFR part 280) standards for used oil stored in underground tanks whether or not the used oil exhibits any characteristics of hazardous waste, in addition to the requirements of Section 15 of this Chapter.

279.64(a) (i) Storage units. Used oil burners may not store used oil in units other than tanks, containers, or units subject to regulation under Chapter 5 and either Chapter 10 or Chapter 11, Section 1 and Sections 4 through 31 of this Chapter.

279.64(b) (ii) Condition of units. Containers and aboveground tanks used to store oil at burner facilities must be:

279.64(b)(1) (A) In good condition (no severe rusting, apparent structural defects or deterioration); and

279.64(b)(2) (B) Not leaking (no visible leaks).

279.64(c) (iii Secondary containment for containers. Containers used to store used oil at burner facilities must be equipped with a secondary containment system.

279.64(c)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall.

279.64(c)(2) (B) The entire containment system, including walls and floor, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.64(d) (iv) Secondary containment for existing aboveground tanks. Existing aboveground tanks used to store used oil at burner facilities must be equipped with a secondary containment system.

279.64(d)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall except areas where existing portions of the tank meet the ground; or

...(iii) (III) An equivalent secondary containment system.

279.64(d)(2) (B) The entire containment system, including walls and floor, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.64(e) (v) Secondary containment for existing aboveground tanks. New aboveground tanks used to store used oil at burner facilities must be equipped with a secondary containment system.

279.64(e)(1) (A) The secondary containment system must consist of, at a minimum:

...(i) (I) Dikes, berms or retaining walls; and

...(ii) (II) A floor. The floor must cover the entire area within the dike, berm, or retaining wall; or

...(iii) (III) An equivalent secondary containment system.

279.64(e)(2) (B) The entire containment system, including walls and floor, must be sufficiently impervious to used oil to prevent any used oil released into the containment system from migrating out of the system to the soil, groundwater, or surface water.

279.64(f) (vi) Labels.

279.64(f)(1) (A) Containers and aboveground tanks used to store used oil at burner facilities must be labeled or marked clearly with the words "Used Oil."

279.64(f)(2) (B) Fill pipes used to transfer used oil into underground storage tanks at burner facilities must be labeled or marked clearly with the words "Used Oil."

279.64(g) (vii) Response to releases. Upon detection of a release of used oil to the environment that is not subject to the requirements of 40 CFR part 280, subpart F and which has occurred after the effective date of the ~~authorized used oil program~~ recycled used oil management program in effect for the State of Wyoming if the release occurs in Wyoming, a burner must perform the following cleanup steps:

279.64(g)(1) (A) Stop the release;

279.64(g)(2) (B) Contain the released used oil;

279.64(g)(3) (C) Clean up and manage properly the released used oil and other materials; and

279.64(g)(4) (D) If necessary, repair or replace any leaking used oil storage containers or tanks prior to returning them to service.

279.65 (f) TRACKING

279.65(a) (i) Acceptance. Used oil burners must keep a record of each used oil shipment accepted for burning. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping documents. Records for each shipment must include the following information:

279.65(a)(1) (A) The name and address of the transporter who delivered the used oil to the burner;

279.65(a)(2) (B) The name and address of the generator or processor/re-refiner from whom the used oil was sent to the burner;

279.65(a)(3) (C) The EPA identification number of the transporter who delivered the used oil to the burner;

279.65(a)(4) (D) The EPA identification number (if applicable) of the generator or processor/re-refiner from whom the used oil was sent to the burner;

279.65(a)(5) (E) The quantity of used oil accepted; and

279.65(a)(6) (F) The date of acceptance.

279.65(b) (ii) Record retention. The records described in Section 15(f)(i) of this Chapter must be maintained for at least three years.

279.66 (g) NOTICES

279.66(a) (i) Certification. Before a burner accepts the first shipment of off-specification used oil fuel from a generator, transporter, or processor/re-refiner, the burner must provide to the generator, transporter, or processor/re-refiner a one-time written and signed notice certifying that:

279.66(a)(1) (A) The burner has notified the Director stating the location and general description of his or her used oil management activities; and

279.66(a)(2) (B) The burner will burn the used oil only in an industrial furnace or boiler identified in Section 15(b)(i) of this Chapter.

279.66(b) (ii) Certification retention. The certification described in Section 15(g)(i) of this Chapter must be maintained for three years from the date the burner last receives shipment of off-specification used oil from that generator, transporter, or processor/re-refiner.

279.67 (h) MANAGEMENT OF RESIDUES Burners who generate residues from the storage or burning of used oil must manage the residues as specified in Section 10(a)(v) of this Chapter.

279/Subpart H Section 16. STANDARDS FOR USED OIL FUEL MARKETERS

279.70 (a) APPLICABILITY

279.70(a) (i) Any person who conducts either of the following activities is subject to the requirements of Section 16 of this Chapter:

279.70(a)(1) (A) Directs a shipment of off-specification used oil from their facility to a used oil burner; or

279.70(a)(2) (B) First claims that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in Section 10(b) of this Chapter.

279.70(b) (ii) The following persons are not marketers subject to Section 16 of this Chapter:

279.70(b)(1) (A) Used oil generators, and transporters who transport used oil received only from generators, unless the generator or transporter directs a shipment of off-specification used oil from their facility to a used oil burner. However, processors/re-refiners who burn some used oil fuel for purposes of processing are considered to be burning incidentally to processing. Thus, generators and transporters who direct shipments of off-specification used oil to processor/re-refiners who incidentally burn used oil are not marketers subject to Section 16 of this Chapter;

279.70(b)(2) (B) Persons who direct shipments of on-specification used oil and who are not the first person to claim the oil meets the used oil fuel specifications of Section 10(b) of this Chapter.

279.70(c) (iii) Any person subject to the requirements of Section 16 of this Chapter must also comply with one of the following:

279.70(c)(1) (A) Section 11 of this Chapter - Standards for Used Oil Generators;

279.70(c)(2) (B) Section 13 of this Chapter - Standards for Used Oil Transporters and Transfer Facilities;

279.70(c)(3) (C) Section 14 of this Chapter - Standards for Used Oil Processors and Re-refiners; or

279.70(c)(4) (D) Section 15 of this Chapter - Standards for Used Oil Burners who Burn Off-Specification Used Oil for Energy Recovery.

279.71 (b) PROHIBITIONS A used oil fuel marketer may initiate a shipment of off-specification used oil only to a used oil burner who:

279.71(a) (i) Has an EPA identification number; and

279.71(b) (ii) Burns the used oil in an industrial furnace or boiler identified in Section 15(b)(i) of this Chapter.

279.72 (c) ON-SPECIFICATION USED OIL FUEL

279.72(a) (i) Analysis of used oil fuel. A generator, transporter, processor/re-refiner, or burner may determine that used oil that is to be burned for energy recovery meets the fuel specifications of Section 10(b) of this Chapter by performing analyses or obtaining copies of analyses or other information documenting that the used oil fuel meets the specifications.

279.72(b) (ii) Record retention. A generator, transporter, processor/re-refiner, or burner who first claims that used oil that is to be burned for energy recovery meets the specifications for used oil fuel under Section 10(b) of this Chapter, must keep copies of analyses of the used oil (or other information used to make the determination) for three years.

279.73 (d) NOTIFICATION

279.73(a) (i) Identification numbers. A used oil fuel marketer subject to the requirements of Section 16 of this Chapter who has not previously complied with the notification requirements of Chapter 1, Section 1(h) of these rules and regulations and W.S. 35-11-503(d) must comply with these requirements and obtain an EPA identification number.

279.73(b) (ii) A marketer who has not received an EPA identification number may obtain one by notifying the Director of their used oil activity by submitting either:

279.73(b)(1) (A) A completed EPA Form 8700-12; or

279.73(b)(2) (B) A letter requesting an EPA identification number. The letter should include the following information:

...(i) (I) Marketer company name;

...(ii) (II) Owner of the marketer;

...(iii) (III) Mailing address for the marketer;

...(iv) (IV) Name and telephone number for the marketer point of contact; and

...(v) (V) Type of used oil activity (i.e., generator directing shipments of off-specification used oil to a burner).

279.74 (e) TRACKING

279.74(a) (i) Off-specification used oil delivery. Any used oil marketer who directs a shipment of off-specification used oil to a burner must keep a record of each shipment of used oil to a used oil burner. These records may take the form of a log, invoice, manifest, bill of lading or other shipping documents. Records for each shipment must include the following information:

279.74(a)(1) (A) The name and address of the transporter who delivers the used oil to the burner;

279.74(a)(2) (B) The name and address of the burner who will receive the used oil;

279.74(a)(3) (C) The EPA identification number of the transporter who delivers the used oil to the burner;

279.74(a)(4) (D) The EPA identification number of the burner;

279.74(a)(5) (E) The quantity of used oil shipped; and

279.74(a)(6) (F) The date of shipment.

279.74(b) (ii) On-specification used oil delivery. A generator, transporter, processor/re-refiner, or burner who first claims that used oil that is to be burned for energy recovery meets the fuel specifications under Section 10(b) of this Chapter must keep a record of each shipment of used oil to an on-specification used oil burner. Records for each shipment must include the following information:

279.74(b)(1) (A) The name and address of the facility receiving the shipment;

279.74(b)(2) (B) The quantity of used oil fuel delivered;

279.74(b)(3) (C) The date of shipment or delivery; and

279.74(b)(4) (D) A cross-reference to the record of used oil analysis or other information used to make the determination that the oil meets the specification as required under Section 16(c)(i) of this Chapter.

279.74(c) (iii) Record retention. The records described in Sections 16(e)(i) and 16(e)(ii) of this Chapter must be maintained for at least three years.

279.75 (f) NOTICES

279.75(a) (i) Certification. Before a used oil generator, transporter, or processor/re-refiner directs the first shipment of off-specification used oil fuel to a burner, he or she must obtain a one-time written and signed notice from the burner certifying that:

279.75(a)(1) (A) The burner has notified the Director stating the location and general description of used oil management activities; and

279.75(a)(2) (B) The burner will burn the off-specification used oil only in an industrial furnace or boiler identified in Section 15(b)(i) of this Chapter.

279.75(b) (ii) Certification retention. The certification described in Section 16(f)(i) of this Chapter must be maintained for three years from the date the last shipment of off-specification used oil is shipped to the burner.

279/Subpart I Section 17. STANDARDS FOR USE AS A DUST SUPPRESSANT AND DISPOSAL OF USED OIL

279.80 (a) APPLICABILITY The requirements of Section 17 of this Chapter apply to all used oils that cannot be recycled and are therefore being disposed.

279.81 (b) DISPOSAL

279.81(a) (i) Disposal of hazardous used oils. Used oils that are identified as a hazardous waste and cannot be recycled in accordance with Sections 9 through 17 of this Chapter must be managed in accordance with the hazardous waste management requirements of Chapter 1, Sections 1(a) through (j) and Section 3; Chapters 2 through 11; Chapter 12, Sections 1 through 8, <u>19 and 20;</u> and Chapter 13 of these rules and regulations.

279.81(b) (ii) Disposal of nonhazardous used oils. Used oils that are not hazardous wastes and cannot be recycled under this part must be disposed in accordance with the requirements of 40 CFR part 257 and 40 CFR part 258.

279.82 (c) USE AS A DUST SUPPRESSANT

279.82(a) (i) The use of used oil as a dust suppressant is prohibited ^.

279.82(b) (ii) A State may petition (e.g., as part of its authorization petition submitted to EPA under 40 CFR part 271.5 or by a separate submission) EPA to allow the use of used oil (that is not mixed with hazardous waste and does not exhibit a characteristic other than ignitability) as a dust suppressant. The State must show that it has a program in place to prevent the use of used oil/hazardous waste mixtures or used oil exhibiting a characteristic other than ignitability as a dust suppressant. In addition, such programs must minimize the impacts of use as a dust suppressant on the environment.

279.82(c) (iii) List of States. [Reserved]

Section 18. AVAILABILITY OF USED OIL GUIDANCE Guidance materials are available from the Department which provide regulatory interpretations concerning the used oil regulations of this Chapter, including specific guidance on the conditions under which it is acceptable to spray used oil on coal. These guidance materials may be obtained by contacting the DEQ Solid and Hazardous Waste Division at 122 W 25th Street, Cheyenne, WY 82002, or by telephone at (307) 777-7752.

266/Subpart M Section 19. MILITARY MUNITIONS

266.200 (a) APPLICABILITY

266.200(a) (i) The regulations in Section 19 of this Chapter identify when military munitions become a waste material, and, if these wastes are also hazardous under Section 19 of this Chapter or Chapter 2 of these rules and regulations, the management standards that apply to these wastes.

266.200(b) (ii) Unless otherwise specified in Section 19 of this Chapter, all applicable requirements in Chapters 1 through 11 of these rules and regulations; Sections 1 through 8, 19 and 20 of this Chapter; and Chapter 13 of these rules and regulations apply to waste military munitions.

266.201 (b) DEFINITIONS ^ The following terms are defined in Chapter 1, Section 1(f)(i) of these rules and regulations: "Active range", "Chemical agents and munitions", "Director", "Explosives or munitions emergency response specialist", "Explosives or munitions emergency", "Explosives or munitions emergency response", "Inactive range", "Military", "Military munitions", "Military range", and "Unexploded ordnance (UXO)".

266.202 (c) DEFINITION OF WASTE MATERIAL

266.202(a) (i) A military munition is not a waste material when:

266.202(a)(1) (A) Used for its intended purpose, including:

...(i) (I) Use in training military personnel or explosives and munitions emergency response specialists (including training in proper destruction of unused propellant or other munitions); or

...(ii) (II) Use in research, development, testing, and evaluation of military munitions, weapons, or weapon systems; or

...(iii) (III) Recovery, collection, and on-range destruction of unexploded ordnance and munitions fragments during range clearance activities at active or inactive ranges. However, "use for intended purpose" does not include the on-range disposal or burial of unexploded ordnance and contaminants when the burial is not a result of product use.

266.202(a)(2) (B) An unused munition, or component thereof, is being repaired, reused, recycled, reclaimed, disassembled, reconfigured, or otherwise subjected to materials recovery activities, unless such activities involve use constituting disposal as defined in Chapter 1, Section 1(f)(i) "Waste Material"(C)(I) of these rules and regulations, or burning for energy recovery as defined in Chapter 1, Section 1(f)(i) "Waste Material"(C)(II) of these rules and regulations.

266.202(b) (ii) An unused military munition is a [solid]waste material when any of the following occurs:

266.202(b)(1) (A) The munition is abandoned by being disposed of, burned, detonated (except during intended use as specified in [paragraph (a)] Section 19(c)(i) of this Chapter) incinerated, or treated prior to disposal; or

266.202(b)(2) (B) The munition is removed from storage in a military magazine or other storage area for the purpose of being disposed of, burned, or incinerated, or treated prior to disposal, or

266.202(b)(3) (C) The munition is deteriorated or damaged (e.g., the integrity of the munition is compromised by cracks, leaks, or other damage) to the point that it cannot be put into serviceable condition, and cannot reasonably be recycled or used for other purposes; or

266.202(b)(4) (D) The munition has been declared a waste material by an authorized military official.

266.202(c) (iii) A used or fired military munition is a waste material:

266.202(c)(1) (A) When transported off range or from the site of use, where the site of use is not a range, for the purposes of storage reclamation, treatment, disposal, or treatment prior to disposal; or

266.202(c)(2) (B) If recovered, collected, and then disposed of by burial, or landfilling either on or off a range.

266.202(d) (iv) For purposes of Chapter 1, Section 1(f)(i) "Waste Material" of these rules and regulations, a used or fired military munition is a waste material, and, therefore, is potentially subject to RCRA corrective action authorities under W.S. 35-11-503(d), Chapter 10, Section 6(l)(iii), Chapter 11, Section 8(f), or **RCRA** Sections 3004(u) and (v), and 3008(h), or imminent and substantial endangerment authorities under W.S. 35-11-115; W.S. 35-11-503(d); Articles 7 and 9 of the Wyoming Environmental Quality Act or Chapter 1, Section 1(k) of these rules and regulations or **RCRA** Section 7003, if the munition lands off-range and is not promptly rendered safe and/or retrieved. Any imminent and substantial threats associated with any remaining material must be addressed. If remedial action is infeasible, the operator of the range must **notify the Director in writing** and maintain a record of the event for as long as any threat remains. The record must include the type of munition and its location (to the extent the location is known).

266.203 (d) STANDARDS APPLICABLE TO THE TRANSPORTATION OF WASTE MATERIAL MILITARY MUNITIONS

266.203(a) (i) Criteria for hazardous waste regulation of waste non-chemical military munitions in transportation.

266.203(a)(1) (A) Waste military munition that are being transported and that exhibit a hazardous waste characteristic or are listed as hazardous waste under Chapter 2 of these rules and regulations, are listed or identified as a hazardous waste (and thus are subject to regulation under Chapters 1 through 11 of these rules and regulations; Sections 1 through 8, 19 and 20 of this Chapter; and Chapter 13 of these rules and regulations, unless all the following conditions are met:

...(i) (I) The waste military munitions are not chemical agents or chemical munitions;

...(ii) (II) The waste military munitions must be transported in accordance with the Department of Defense shipping controls applicable to the transport of military munitions;

...(iii) (III) The waste military munitions must be transported from a military owned or operated installation to a military owned or operated treatment, storage, or disposal facility; and

...(iv) (IV) The transporter of the waste must provide oral notice to the Director within 24 hours from the time the transporter becomes aware of any loss or theft of the waste military munitions, or any failure to meet a condition of Section 19(d)(i)(A) of this Chapter that may endanger health or the environment. In addition, a written submission describing the circumstances shall be provided within 5 days from the time the transporter becomes aware of any loss or theft of the waste military munitions or any failure to meet a condition of Section 19(d)(i)(A) of this Chapter.

266.203(a)(2) (B) If any waste military munitions shipped under Section 19(d)(i)(A) of this Chapter are not received by the receiving facility within 45 days of the day the waste was shipped, the owner or operator of the receiving facility must report this non-receipt to the Director within 5 days.

266.203(a)(3) (C) The exemption in Section 19(d)(i)(A) of this Chapter from regulation as hazardous waste shall apply only to the transportation of non-chemical waste military munitions. It does not affect the regulatory status of waste military munitions as hazardous wastes with regard to storage, treatment or disposal.

266.203(a)(4) (D) The conditional exemption in Section 19(d)(i)(A) of this Chapter applies only so long as all of the conditions in Section 19(d)(i)(A) of this Chapter are met.

266.203(b) (ii) Reinstatement of exemption. If any waste military munition loses its exemption under Section 19(d)(i)(A) of this Chapter, an application may be filed with the Director for reinstatement of the exemption from hazardous waste transportation regulation with respect to such munition as soon as the munition is returned to compliance with the conditions of Section 19(d)(i)(A) of this Chapter. If the Director finds that reinstatement of the exemption is appropriate based on factors such as the transporter's provision of a satisfactory explanation of the circumstances of the violation, or a demonstration that the violations are not likely to recur, the Director may reinstate the exemption under Section 19(d)(i)(A) of this Chapter. ^ If the Director does not take action on the reinstatement application within 60 days after receipt of the application **and if the military continues to seek reinstatement of the exemption, it is the responsibility of the military to contact**

the Director to establish a mutually-agreeable time line for the Director to address the application. In reinstating the exemption under Section 19(d)(i)(A) of this Chapter, the Director may specify additional conditions as are necessary to ensure and document proper transportation to protect human health and the environment.

266.203(c) (iii) Amendments to DOD shipping controls. The Department of Defense shipping controls applicable to the transport of military munitions referenced in Section 19(d)(i)(A)(II) of this Chapter,^ **and in effect on November 8, 1995, are the Signature and Tally Record (DD Form 1907) and the Motor Vehicle Inspection(Transporting Hazardous Materials) (DD Form 626). For shipment by commercial transport the U.S. Government Bill of Lading (GBL) (GSA Standard Form 1103) is also required. For shipment by military transport, the following additional controls are applicable: DoD Single Line Item Release/Receipt Document (DD Form 1348-1A) and the Shipping Paper and Emergency Response Information for Hazardous Materials Transported by Government Vehicles (DD Form 836).** Any amendments to the **above** Department of Defense shipping controls shall **not** become effective for purposes of Section 19(d)(i)(A) of this Chapter **until the amended Department of Defense shipping control has been adopted as rule by the Department of Environmental Quality. Adoption of an amended Department of Defense shipping control will be contingent on the Director's affirmative finding that the amended shipping control(s) is/are protective of human health and the environment. Copies of Department of Defense shipping controls can be obtained upon request from the Wyoming Department of Environmental Quality, 122 West 25th Street Cheyenne, Wyoming 82009.**

266.204 (e) STANDARDS APPLICABLE TO EMERGENCY RESPONSES

(i) Explosives and munitions emergencies involving military munitions or explosives are subject to Chapter 8, Section 1(a)(x); Chapter 9, Section 1(a)(v); Chapter 10, Section 1(a)(vii)(H); Chapter 11, Section 1(a)(iii)(K); Chapter 1, Section 1(h)(iii)(C) of these rules and regulations or alternatively to Chapter 7, Section 11(b) of these rules and regulations.

266.205 (f) STANDARDS APPLICABLE TO THE STORAGE OF WASTE MATERIAL MILITARY MUNITIONS

266.205(a) (i) Criteria for hazardous waste regulation of waste non-chemical military munitions in storage.

266.205(a)(1) (A) Waste military munitions in storage that exhibit a hazardous waste characteristic or are listed as hazardous waste under Chapter 2 of these rules and regulations, are listed or identified as a hazardous waste (and thus are subject to regulation under Chapters 1 through 14 of these rules and regulations), unless all the following conditions are met:

...(i) (I) The waste military munitions are not chemical agents or chemical munitions.

...(ii) (II) The waste military munitions must be subject to the jurisdiction of the Department of Defense Explosives Safety Board (DDESB).

...(iii) (III) The waste military munitions must be stored in accordance with the DDESB storage standards applicable to waste military munitions.

...(iv) (IV) Within 90 days of August 12, 1997 or within 90 days of when a storage unit is first used to store waste military munitions, whichever is later, the owner or operator must notify the Director of the location of any waste storage unit used to store waste military munitions for which the conditional exemption in Section 19(f)(i)(A) of this Chapter is claimed.

...(v) (V) The owner or operator must provide oral notice to the Director within 24 hours from the time the owner or operator becomes aware of any loss or theft of the waste military munitions, or any failure to meet a condition of Section 19(f)(i)(A) of this Chapter that may endanger health or the environment. In addition, a written submission describing the circumstances shall be provided within 5 days from the time the owner or operator becomes aware of any loss or theft of the waste military munitions or any failure to meet a condition of Section 19(f)(i)(A) of this Chapter.

...(vi) (VI) The owner or operator must inventory the waste military munitions at least annually, must inspect the waste military munitions at least quarterly for compliance with the conditions of Section 19(f)(i)(A) of this Chapter, and must maintain records of the findings of these inventories and inspections for at least three years.

...(vii) (VII) Access to the stored waste military munitions must be limited to appropriately trained and authorized personnel.

(VIII) The owner or operator may store only waste military munitions generated by the individual facility.

(IX) Section 19(f)(i)(A)(VIII) of this Chapter does not apply if storage of waste military munitions from another facility is the result of an inability to transport the waste military munitions for treatment or disposal due to inclement weather or other circumstance as approved in writing by the Director.

266.205(a)(2) (B) The conditional exemption in Section 19(f)(i)(A) of this Chapter from regulation as hazardous waste shall apply only to the storage of non-chemical waste military munitions. It does not affect the regulatory status of waste military munitions as hazardous wastes with regard to transportation, treatment or disposal.

266.205(a)(3) (C) The conditional exemption in Section 19(f)(i)(A) of this Chapter applies only so long as all of the conditions in Section 19(f)(i)(A) of this Chapter are met.

266.205(b) (ii) Notice of termination of waste storage. The owner or operator must notify the Director when a storage unit identified in Section 19(f)(i)(A)(IV) of this Chapter will no longer be used to store waste military munitions.

266.205(c) (iii) Reinstatement of conditional exemption. If any waste military munition loses its conditional exemption under Section 19(f)(i)(A) of this Chapter, an application may be filed with the Director for reinstatement of the conditional exemption from hazardous waste storage regulation with respect to such munition as soon as the munition is returned to compliance with the conditions of Section 19(f)(i)(A) of this Chapter. If the Director finds that reinstatement of the conditional exemption is appropriate based on factors such as the owner's or operator's provision of a satisfactory explanation of the circumstances of the violation, or a demonstration that the violations are not likely to recur, the Director may reinstate the conditional exemption under Section 19(f)(i)(A) of this Chapter. If the Director does not take action on the reinstatement application within 60 days after receipt of the application ^**and if the military continues to seek reinstatement of the exemption, it is the responsibility of the military to contact the Director to establish a mutually-agreeable time line for the Director to address the application**. In reinstating the conditional exemption under Section 19(f)(i)(A) of this Chapter, the Director may specify additional conditions as are necessary to ensure and document proper storage to protect human health and the environment.

266.205(d) (iv) Waste chemical munitions.

266.205(d)(1) (A) Waste military munitions that are chemical agents or chemical munitions and that exhibit a hazardous waste characteristic or are listed as hazardous waste under Chapter 2 of these rules and regulations, are listed or identified as a hazardous waste and shall be subject to the applicable regulatory requirements of the ^ **Wyoming Environmental Quality Act.**

266.205(d)(2) (B) Waste military munitions that are chemical agents or chemical munitions and that exhibit a hazardous waste characteristic or are listed as hazardous waste under Chapter 2 of these rules and regulations, are not subject to the storage prohibition in RCRA Section 3004(j) and W.S. 35-11-503(d), codified at Chapter 13, Section 5(a) of these rules and regulations.

266.205(e) (v) Amendments to DDESB storage standards. The DDESB storage standards applicable to waste military munitions, referenced in Section 19(f)(i)(A)(III) of this Chapter, are DOD 6055.9-STD ("DOD Ammunition and Explosive Safety Standards"), in effect on November 8, 1995, except as provided in the following sentence. Any amendments to the DDESB storage standards shall **not** become effective for purposes of Section 19(f)(i)(A) of this Chapter **until the amended Department of Defense DDESB storage standards have been adopted as rule by the Department of Environmental Quality. Adoption of amended Department of Defense DDESB storage standards will be contingent on the Director's affirmative finding that the DDESB storage standards are protective of human health and the environment.**

266.206 (g) STANDARDS APPLICABLE TO THE TREATMENT AND DISPOSAL OF WASTE MILITARY MUNITIONS

(i) The treatment and disposal of hazardous waste military munitions are subject to the applicable permitting, procedural, and technical standards in Chapters 1 through 11 of these rules and regulations; Sections 1 through 8, 19 and 20 of this Chapter, and Chapter 13 of these rules and regulations.

266/Subpart N Section 20. CONDITIONAL EXEMPTION FOR LOW-LEVEL MIXED WASTE STORAGE, TREATMENT, TRANSPORTATION AND DISPOSAL TERMS

266.210 (a) DEFINITIONS ^ The following terms are defined in Chapter 1, Section 1(f)(i) of these rules and regulations: "Agreement State", "Certified delivery", "Director", "Eligible Naturally Occurring and/or Accelerator-produced Radioactive Material (NARM)", "Exempted waste", "Land Disposal Restriction (LDR) Treatment Standards", "License", "Low-Level Mixed Waste (LLMW)", "Low-Level Radioactive Waste (LLW)", "Mixed Waste", "Naturally Occurring and/or Accelerator-produced Radioactive Material (NARM)", "NRC", "We or us", and "You".

266.220 (b) WHAT DOES A STORAGE AND TREATMENT CONDITIONAL EXEMPTION DO? The storage and treatment conditional exemption exempts your low-level mixed waste from the regulatory definition of hazardous waste in Chapter 2, Section 1(c) of these rules and regulations if your waste meets the eligibility criteria in Section 20(c) of this Chapter and you meet the conditions in Section 20(d) of this Chapter.

266.225 (c) WHAT WASTES ARE ELIGIBLE FOR THE STORAGE AND TREATMENT CONDITIONAL EXEMPTION? Low-level mixed waste (LLMW), defined in Chapter 1, Section 1(f)(i) of these rules and regulations, is eligible for this conditional exemption if it is generated and managed by you under a single NRC or NRC Agreement State license. (Mixed waste generated at a facility with a different license number and shipped to your facility for storage or treatment requires a permit and is ineligible for this exemption. In addition, NARM waste is ineligible this exemption.)

266.230 (d) WHAT CONDITIONS MUST YOU MEET FOR YOUR LLMW TO QUALIFY FOR AND MAINTAIN A STORAGE AND TREATMENT EXEMPTION?

266.230(a) (i) For your LLMW to qualify for the exemption you must notify us in writing by certified delivery that you are claiming a conditional exemption for the LLMW stored on your facility. The dated notification must include your name, address, RCRA identification number, NRC or NRC Agreement State license number, the waste code(s) and storage unit(s) for which you are seeking an exemption, and a statement that you meet the conditions of this Section. Your notification must be signed by your authorized representative who certifies that the information in the notification is true, accurate, and complete. You must notify us of your claim either within 90 days of the effective date of this rule in ^ **Wyoming**, or within 90 days of when a storage unit is first used to store conditionally exempt LLMW.

266.230(b) (ii) To qualify for and maintain an exemption for your LLMW you must:

266.230(b)(1) (A) Store your LLMW waste in tanks or containers in compliance with the requirements of your license that apply to the proper storage of low-level radioactive waste (not including those license requirements that relate solely to recordkeeping);

266.230(b)(2) (B) Store your LLMW in tanks or containers in compliance with chemical compatibility requirements of a tank or container in Chapter 10, Sections 8(h) or 9(j); or Chapter 11, Section 10(h) or 11(j) of these rules and regulations;

266.230(b)(3) (C) Certify that facility personnel who manage stored conditionally exempt LLMW are trained in a manner that ensures that the conditionally exempt waste is safely managed and includes training in chemical waste management and hazardous materials incidents response that meets the personnel training standards found in Chapter 11, Section 4(g)(i)(C) of these rules and regulations;

266.230(b)(4) (D) Conduct an inventory of your stored conditionally exempt LLMW at least annually and inspect it at least quarterly for compliance with Section 20 of this Chapter; and

266.230(b)(5) (E) Maintain an accurate emergency plan and provide it to all local authorities who may have to respond to a fire, explosion, or release of hazardous waste or hazardous constituents. Your plan must describe emergency response arrangements with local authorities; describe evacuation plans; list the names, addresses, and telephone numbers of all facility personnel qualified to work with local authorities as emergency coordinators; and list emergency equipment.

266.235 (e) WHAT WASTE TREATMENT DOES THE STORAGE AND TREATMENT CONDITIONAL EXEMPTION ALLOW? You may treat your low-level mixed waste at your facility within a tank or container in accordance with the terms of your NRC or NRC Agreement State license. Treatment that cannot be done in a tank or container without a hazardous waste management permit (such as incineration) is not allowed under this exemption.

266.240 (f) HOW COULD YOU LOSE THE CONDITIONAL EXEMPTION FOR YOUR LLMW AND WHAT ACTION MUST YOU TAKE?

266.240(a) (i) Your LLMW will automatically lose the storage and treatment conditional exemption if you fail to meet any of the conditions specified in Section 20(d) of this Chapter. When your LLMW loses the exemption, you must immediately manage that waste which failed the condition as ^ hazardous waste, and the storage unit storing the LLMW immediately becomes subject to ^ hazardous waste container and/or tank storage requirements.

266.240(a)(1) (A) If you fail to meet any of the conditions specified in Section 20(d) of this Chapter you must report to us and the NRC, or the oversight agency in the NRC Agreement State, in writing by certified delivery within 30 days of learning of the failure. Your report must be signed by your authorized representative certifying that the information provided is true, accurate, and complete. This report must include:

...(i) (I) The specific condition(s) you failed to meet;

...(ii) (II) A description of the LLMW (including the waste name, hazardous waste codes and quantity) and storage location at the facility; and

...(iii) (III) The date(s) on which you failed to meet the condition(s).

266.240(a)(2) (B) If the failure to meet any of the conditions may endanger human health or the environment, you must also immediately notify us orally within 24 hours and follow up with a written notification within five days. Failures that may endanger human health or the environment include, but are not limited to, discharge of a CERCLA reportable quantity or other leaking or exploding tanks or containers, or detection of radionuclides above background or hazardous constituents in the leachate collection system of a storage area. If the failure may endanger human health or the environment, you must follow the provisions of your emergency plan.

266.240(b) (ii) We may terminate your conditional exemption for your LLMW, or require you to meet additional conditions to claim a conditional exemption, for serious or repeated noncompliance with any requirement(s) of Section 20 of this Chapter.

266.245 (g) IF YOU LOSE THE STORAGE AND TREATMENT CONDITIONAL EXEMPTION FOR YOUR LLMW, CAN THE EXEMPTION BE RECLAIMED?

266.245(a) (i) You may reclaim the storage and treatment exemption for your LLMW if:

266.245(a)(1) (A) You again meet the conditions specified in Section 20(d) of this Chapter; and

266.245(a)(2) (B) You send us a notice by certified delivery that you are reclaiming the exemption for your LLMW. Your notice must be signed by your authorized representative certifying that the information contained in your notice is true, complete, and accurate. In your notice you must do the following:

...(i) (I) Explain the circumstances of each failure.

...(ii) (II) Certify that you have corrected each failure that caused you to lose the exemption for your LLMW and that you again meet all the conditions as of the date you specify.

...(iii) (III) Describe plans that you have implemented, listing specific steps you have taken, to ensure the conditions will be met in the future.

...(iv) (IV) Include any other information you want us to consider when we review your notice reclaiming the exemption.

266.245(b) (ii) We may terminate a reclaimed conditional exemption if we find that your claim is inappropriate based on factors including, but not limited to, the following: you have failed to correct the problem; you explained the circumstances of the failure unsatisfactorily; or you failed to implement a plan with steps to prevent another failure to meet the conditions of Section 20(d) of this Chapter. In reviewing a reclaimed conditional exemption under this Section, we may add conditions to the exemption to ensure that waste management during storage and treatment of the LLMW will protect human health and the environment.

266.250 (h) WHAT RECORDS MUST YOU KEEP AT YOUR FACILITY AND FOR HOW LONG?

266.250(a) (i) In addition to those records required by your NRC or NRC Agreement State license, you must keep records as follows:

266.250(a)(1) (A) Your initial notification records, return receipts, reports to us of failure(s) to meet the exemption conditions, and all records supporting any reclaim of an exemption;

266.250(a)(2) (B) Records of your LLMW annual inventories, and quarterly inspections;

266.250(a)(3) (C) Your certification that facility personnel who manage stored mixed waste are trained in safe management of LLMW including training in chemical waste management and hazardous materials incidents response; and

266.250(a)(4) (D) Your emergency plan as specified in Section 20(d)(ii) of this Chapter.

266.250(b) (ii) You must maintain records concerning notification, personnel trained, and your emergency plan for as long as you claim this exemption and for three years thereafter, or in accordance with NRC regulations under 10 CFR part 20 (or equivalent NRC Agreement State regulations), whichever is longer. You must maintain records concerning your annual inventory and quarterly inspections for three years after the waste is sent for disposal, or in accordance with NRC regulations under 10 CFR part 20 (or equivalent NRC Agreement State regulations), whichever is longer.

266.255 (i) WHEN IS YOUR LLMW NO LONGER ELIGIBLE FOR THE STORAGE AND TREATMENT CONDITIONAL EXEMPTION?

266.255(a) (i) When your LLMW has met the requirements of your NRC or NRC Agreement State license for decay-in-storage and can be disposed of as non-radioactive waste, then the conditional exemption for storage no longer applies. On that date your waste is subject to hazardous waste regulation under the relevant Sections of Chapters 1 through 11 of these rules and regulations; Sections 1 through 8, 19 and 20 of this Chapter; and Chapter 13 of these rules and regulations and the time period for accumulation of a hazardous waste as specified in Chapter 8, Section 3(e) of these rules and regulations begins.

266.255(b) (ii) When your conditionally exempt LLMW, which has been generated and stored under a single NRC or NRC Agreement State license number, is removed from storage, it is no longer eligible for the storage and treatment exemption. However, your waste may be eligible for the transportation and disposal conditional exemption at Section 20(k) of this Chapter.

266.260 (j) DO CLOSURE REQUIREMENTS APPLY TO UNITS THAT STORED LLMW PRIOR TO THE EFFECTIVE DATE OF SECTION 20 OF THIS CHAPTER? Interim status and permitted storage units that have been used to store only LLMW prior to the effective date of Section 20 of this Chapter [subpart N of this part] and, after that date, store only LLMW which becomes exempt under this Section, are not subject to the closure requirements of Chapters 5, 10 and 11 of these rules and regulations. Storage units (or portions of units) that have been used to store both LLMW and non-mixed hazardous waste prior to the effective date of this Section or are used to store both after that date remain subject to closure requirements with respect to the non-mixed hazardous waste.

266.305 (k) WHAT DOES THE TRANSPORTATION AND DISPOSAL CONDITIONAL EXEMPTION DO? This conditional exemption exempts your waste from the regulatory definition of hazardous waste in Chapter 2, Section 1(c)if your waste meets the eligibility criteria under Section 20 (l) of this Chapter, and you meet the conditions in Section 20(m) of this Chapter.

266.310 (l) WHAT WASTES ARE ELIGIBLE FOR THE TRANSPORTATION AND DISPOSAL CONDITIONAL EXEMPTION? Eligible waste must be:

266.310(a) (i) A low-level mixed waste (LLMW), as defined in Chapter 1, Section 1(f)(i) of these rules and regulations, that meets the waste acceptance criteria of a LLRWDF; and/or

266.310(b) (ii) An eligible NARM waste, defined in Chapter 1, Section 1(f)(i) of these rules and regulations.

266.315 (m) WHAT ARE THE CONDITIONS YOU MUST MEET FOR YOUR WASTE TO QUALIFY FOR AND MAINTAIN THE TRANSPORTATION AND DISPOSAL CONDITIONAL EXEMPTION? You must meet the following conditions for your eligible waste to qualify for and maintain the exemption:

266.315(a) (i) The eligible waste must meet or be treated to meet LDR treatment standards as described in Section 20(n) of this Chapter.

266.315(b) (ii) If you are not already subject to NRC, or NRC Agreement State equivalent manifest and transportation regulations for the shipment of your waste, you must manifest and transport your waste according to NRC regulations as described in Section 20(o) of this Chapter.

266.315(c) (iii) The exempted waste must be in containers when it is disposed of in the LLRWDF as described in Section 20(r) of this Chapter.

266.315(d) (iv) The exempted waste must be disposed of at a designated LLRWDF as described in Section 20(q) of this Chapter.

266.320 (n) WHAT TREATMENT STANDARDS MUST YOUR ELIGIBLE WASTE MEET? Your LLMW or eligible NARM waste must meet Land Disposal Restriction (LDR) treatment standards specified in Chapter 13, Section 4 of these rules and regulations.

266.325 (o) ARE YOU SUBJECT TO THE MANIFEST AND TRANSPORTATION CONDITION IN SECTION 20(M) OF THIS CHAPTER? If you are not already subject to NRC, or NRC Agreement State equivalent manifest and transportation regulations for the shipment of your waste, you must meet the manifest requirements under 10 CFR 20.2006 (or NRC Agreement State equivalent regulations), and the transportation requirements under 10 CFR 1.5 (or NRC Agreement State equivalent regulations) to ship the exempted waste.

Sec. 266.330 (p) WHEN DOES THE TRANSPORTATION AND DISPOSAL EXEMPTION TAKE EFFECT? The exemption becomes effective once all the following have occurred:

266.330(a) (i) Your eligible waste meets the applicable LDR treatment standards.

266.330(b) (ii) You have received return receipts that you have notified us and the LLRWDF as described in Section 20(s) of this Chapter.

266.330(c) (iii) You have completed the packaging and preparation for shipment requirements for your waste according to NRC Packaging and Transportation regulations found under 10 CFR part 71 (or NRC Agreement State equivalent regulations); and you have prepared a manifest for your waste according to NRC manifest regulations found under 10 CFR part 20 (or NRC Agreement State equivalent regulations), and

266.330(d) (iv) You have placed your waste on a transportation vehicle destined for a LLRWDF licensed by NRC or an NRC Agreement State.

266.335 (q) WHERE MUST YOUR EXEMPTED WASTE BE DISPOSED OF? Your exempted waste must be disposed of in a LLRWDF that is regulated and licensed by NRC under 10 CFR part 61 or by an NRC Agreement State under equivalent State regulations, including State NARM licensing regulations for eligible NARM.

266.340 (r) WHAT TYPE OF CONTAINER MUST BE USED FOR DISPOSAL OF EXEMPTED WASTE? Your exempted waste must be placed in containers before it is disposed. The container must be:

266.340(a) (i) A carbon steel drum; or

266.340(b) (ii) An alternative container with equivalent containment performance in the disposal environment as a carbon steel drum; or

266.340(c) (iii) A high integrity container as defined by NRC.

266.345 (s) WHOM MUST YOU NOTIFY?

266.345(a) (i) You must provide a one time notice to us stating that you are claiming the transportation and disposal conditional exemption prior to the initial shipment of an exempted waste from your facility to a LLRWDF. Your dated written notice must include your facility name, address, phone number, and RCRA ID number, and be sent by certified delivery.

266.345(b) (ii) You must notify the LLRWDF receiving your exempted waste by certified delivery before shipment of each exempted waste. You can only ship the exempted waste after you have received the return receipt of your notice to the LLRWDF. This notification must include the following:

266.345(b)(1) (A) A statement that you have claimed the exemption for the waste.

266.345(b)(2) (B) A statement that the eligible waste meets applicable LDR treatment standards.

266.345(b)(3) (C) Your facility's name, address, and RCRA ID number.

266.345(b)(4) (D) The RCRA hazardous waste codes prior to the exemption of the waste streams.

266.345(b)(5) (E) A statement that the exempted waste must be placed in a container according to Section 20(r) of this Chapter prior to disposal in order for the waste to remain exempt under the transportation and disposal conditional exemption of this Section.

266.345(b)(6) (F) The manifest number of the shipment that will contain the exempted waste.

266.345(b)(7) (G) A certification that all the information provided is true, complete, and accurate. The statement must be signed by your authorized representative.

266.350 (t) WHAT RECORDS MUST YOU KEEP AT YOUR FACILITY AND FOR HOW LONG? In addition to those records required by your NRC or NRC Agreement State license, you must keep records as follows:

266.350(a) (i) You must follow the applicable existing recordkeeping requirements under Chapter 10, Section 5(d); Chapter 11, Section 7(d); and Chapter 13, Section 1(g) of these rules and regulations to demonstrate that your waste has met LDR treatment standards prior to your claiming the exemption.

266.350(b) (ii) You must keep a copy of all notifications and return receipts required under Sections 20(u) and (v) of this Chapter for three years after the exempted waste is sent for disposal.

266.350(c) (iii) You must keep a copy of all notifications and return receipts required under Section 20(s)(i) of this Chapter for three years after the last exempted waste is sent for disposal.

266.350(d) (iv) You must keep a copy of the notification and return receipt required under Section 20(s)(ii) of this Chapter for three years after the exempted waste is sent for disposal.

266.350(e) (v) If you are not already subject to NRC, or NRC Agreement State equivalent manifest and transportation regulations for the shipment of your waste, you must also keep all other documents related to tracking the exempted waste as required under 10 CFR 20.2006 or NRC Agreement State equivalent regulations, including applicable NARM requirements, in addition to the records specified in Section 20(t)(i) through (iv) of this Chapter.

266.355 (u) HOW COULD YOU LOSE THE TRANSPORTATION AND DISPOSAL CONDITIONAL EXEMPTION FOR YOUR WASTE AND WHAT ACTIONS MUST YOU TAKE?

266.355(a) (i) Any waste will automatically lose the transportation and disposal exemption if you fail to manage it in accordance with all of the conditions specified in Section 20(m) of this Chapter.

266.355(a)(1) (A) When you fail to meet any of the conditions specified in Section 20(m) of this Chapter for any of your wastes, you must report to us, in writing by certified delivery, within 30 days of learning of the failure. Your report must be signed by your authorized representative certifying that the information provided is true, accurate, and complete. This report must include:

...(i) (I) The specific condition(s) that you failed to meet for the waste;

...(ii) (II) A description of the waste (including the waste name, hazardous waste codes and quantity) that lost the exemption; and

...(iii) (III) The date(s) on which you failed to meet the condition(s) for the waste.

266.355(a)(2) (B) If the failure to meet any of the conditions may endanger human health or the environment, you must also immediately notify us orally within 24 hours and follow up with a written notification within 5 days.

266.355(b) (ii) We may terminate your ability to claim a conditional exemption for your waste, or require you to meet additional conditions to claim a conditional exemption, for serious or repeated noncompliance with any requirement(s) of this Section.

266.360 (v) IF YOU LOSE THE TRANSPORTATION AND DISPOSAL CONDITIONAL EXEMPTION FOR A WASTE, CAN THE EXEMPTION BE RECLAIMED?

266.360(a) (i) You may reclaim the transportation and disposal exemption for a waste after you have received a return receipt confirming that we have received your notification of the loss of the exemption specified in Section 20(u)(i) of this Chapter and if:

266.360(a)(1) (A) You again meet the conditions specified in Section 20(m) of this Chapter for the waste; and

266.360(a)(2) (B) You send a notice, by certified delivery, to us that you are reclaiming the exemption for the waste. Your notice must be signed by your authorized representative certifying that the information provided is true, accurate, and complete. The notice must:

...(i) (I) Explain the circumstances of each failure.

...(ii) (II) Certify that each failure that caused you to lose the exemption for the waste has been corrected and that you again meet all conditions for the waste as of the date you specify.

...(iii) (III) Describe plans you have implemented, listing the specific steps that you have taken, to ensure that conditions will be met in the future.

...(iv) (IV) Include any other information you want us to consider when we review your notice reclaiming the exemption.

266.360(b) (ii) We may terminate a reclaimed conditional exemption if we find that your claim is inappropriate based on factors including, but not limited to: you have failed to correct the problem; you explained the circumstances of the failure unsatisfactorily; or you failed to implement a plan with steps to prevent another failure to meet the conditions of Section 20(m) of this Chapter. In reviewing a reclaimed conditional exemption under this Section, we may add conditions to the exemption to ensure that transportation and disposal activities will protect human health and the environment.

Appendix A - Tier I and Tier II Feed Rate and Emissions Screening Limits for Metals

Table I-A.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Noncomplex Terrain

[Values for urban areas]

Terrain adjusted eff. stack ht. (m)	Antimony (g/hr)	Barium (g/hr)	Lead (g/hr)	Mercury (g/hr)	Silver (g/hr)	Thallium (g/hr)
4	6.0E+01	1.0E+04	1.8E+01	6.0E+01	6.0E+02	60.0
6	6.8E+01	1.1E+04	2.0E+01	6.8E+01	6.8E+02	68.0
8	7.6E+01	1.3E+04	2.3E+01	7.6E+01	7.6E+02	76.0
10	8.6E+01	1.4E+04	2.6E+01	8.6E+01	8.6E+02	86.0
12	9.6E+01	1.7E+04	3.0E+01	9.6E+01	9.6E+02	96.0
14	1.1E+02	1.8E+04	3.4E+01	1.1E+02	1.1E+03	110.0
16	1.3E+02	2.1E+04	3.6E+01	1.3E+02	1.3E+03	130.0
18	1.4E+02	2.4E+04	4.3E+01	1.4E+02	1.4E+03	110.0
20	1.6E+02	2.7E+04	4.6E+01	1.6E+02	1.6E+03	130.0
22	1.8E+02	3.0E+04	5.4E+01	1.8E+02	1.8E+03	170.0
24	2.0E+02	3.4E+04	6.0E+01	2.0E+02	2.0E+03	220.0
26	2.3E+02	3.9E+04	6.8E+01	2.3E+02	2.3E+03	2.3E+02
28	2.6E+02	4.3E+04	7.8E+01	2.6E+02	2.6E+03	2.6E+02
30	3.0E+02	5.0E+04	9.0E+01	3.0E+02	3.0E+03	3.0E+02
35.0	4.0E+02	6.6E+04	1.1E+02	4.0E+02	4.0E+03	400.0
40	4.6E+02	7.8E+04	1.4E+02	4.6E+02	4.6E+03	460.0
45	6.0E+02	1.0E+05	1.8E+02	6.0E+02	6.0E+03	6.0E+02
50	7.8E+02	1.3E+05	2.3E+02	7.8E+02	7.8E+03	7.8E+02
55	9.6E+02	1.7E+05	3.0E+02	9.6E+02	9.6E+03	9.6E+02
60	1.2E+03	2.0E+05	3.6E+02	1.2E+03	1.2E+04	1200.0
65	1.5E+03	2.5E+05	4.3E+02	1.5E+03	1.5E+04	1.5E+03
70	1.7E+03	2.8E+05	5.0E+02	1.7E+03	1.7E+04	1.7E+03
75	1.9E+03	3.2E+05	5.8E+02	1.9E+03	1.9E+04	1.9E+03
80	2.2E+03	3.6E+05	6.4E+02	2.2E+03	2.2E+04	2.2E+03
85	2.5E+03	4.0E+05	7.6E+02	2.5E+03	2.5E+04	2500.0
90	2.8E+03	4.6E+05	8.2E+02	2.8E+03	2.8E+04	2800.0

Table I-A.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Noncomplex Terrain

95	3.2E+03	5.4E+05	9.6E+02	3.2E+03	3.2E+04	3200.0
100	3.6E+03	6.0E+05	1.1E+03	3.6E+03	3.6E+04	3600.0
105	4.0E+03	6.8E+05	1.2E+03	4.0E+03	4.0E+04	4000.0
110	4.6E+03	7.8E+05	1.4E+03	4.6E+03	4.6E+04	4600.0
115	5.4E+03	8.6E+05	1.6E+03	5.4E+03	5.4E+04	5400.0
120.0	6.0E+03	1.0E+06	1.8E+03	6.0E+03	6.0E+04	6.0E+03

Table I-B.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Noncomplex Terrain

[Values for rural areas]

Terrain adjusted eff. stack ht. (m)	Antimony (g/hr)	Barium (g/hr)	Lead (g/hr)	Mercury (g/hr)	Silver (g/hr)	Thallium (g/hr)
4.0	3.1E+01	5.2E+03	9.4E+00	3.1E+01	3.1E+02	3.1E+01
6	3.6E+01	6.0E+03	1.1E+01	3.6E+01	3.6E+02	3.6E+01
8	76.0	6.8E+03	1.2E+01	4.0E+01	4.0E+02	4.0E+01
10	4.6E+01	7.8E+03	1.4E+01	4.6E+01	4.6E+02	4.6E+01
12	5.8E+01	9.6E+03	1.7E+01	5.8E+01	5.8E+02	5.8E+01
14	6.8E+01	1.1E+04	2.1E+01	6.8E+01	6.8E+02	6.8E+01
16	8.6E+01	1.4E+04	2.6E+01	8.6E+01	8.6E+02	8.6E+01
18	1.1E+02	1.8E+04	3.2E+01	1.1E+02	1.1E+03	1.1E+02
20	1.3E+02	2.2E+04	4.0E+01	1.3E+02	1.3E+03	1.3E+02
22	1.7E+02	2.8E+04	5.0E+01	1.7E+02	1.7E+03	1.7E+02
24	2.2E+02	3.6E+04	6.4E+01	2.2E+02	2.2E+03	2.2E+02
26	2.8E+02	4.6E+04	8.2E+01	2.8E+02	2.8E+03	2.8E+02
28	3.5E+02	5.8E+04	1.0E+02	3.5E+02	3.5E+03	3.5E+02
30	4.3E+02	7.6E+04	1.3E+02	4.3E+02	4.3E+03	4.3E+02
35	7.2E+02	1.2E+05	2.1E+02	7.2E+02	7.2E+03	7.2E+02
40	1.1E+03	1.8E+05	3.2E+02	1.1E+03	1.1E+04	1.1E+03
45	1.5E+03	2.5E+05	4.6E+02	1.5E+03	1.5E+04	1.5E+03
50	2.0E+03	3.3E+05	6.0E+02	2.0E+03	2.0E+04	2.0E+03

Table I-B.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Noncomplex Terrain

55	2.6E+03	4.4E+05	7.8E+02	2.6E+03	2.6E+04	2.6E+03
60	3.4E+03	5.8E+05	1.0E+03	3.4E+03	3.4E+04	3.4E+03
65	4.6E+03	7.6E+05	1.4E+03	4.6E+03	4.6E+04	4.6E+03
70	5.4E+03	9.0E+05	1.6E+03	5.4E+03	5.4E+04	5.4E+03
75	6.4E+03	1.1E+06	1.9E+03	6.4E+03	6.4E+04	6.4E+03
80	7.6E+03	1.3E+06	2.3E+03	7.6E+03	7.6E+04	7.6E+03
85	9.4E+03	1.5E+06	2.8E+03	9.4E+03	9.4E+04	9.4E+03
90	1.1E+04	1.8E+06	3.3E+03	1.1E+04	1.1E+05	1.1E+04
95	1.3E+04	2.2E+06	3.9E+03	1.3E+04	1.3E+05	1.3E+04
100	1.5E+04	2.6E+06	4.6E+03	1.5E+04	1.5E+05	1.5E+04
105	1.8E+04	3.0E+06	5.4E+03	1.8E+04	1.8E+05	1.8E+04
110	2.2E+04	3.6E+06	6.6E+03	2.2E+04	2.2E+05	2.2E+04
115	2.6E+04	4.4E+06	7.8E+03	2.6E+04	2.6E+05	2.6E+04
120	3.1E+04	5.0E+06	9.2E+03	3.1E+04	3.1E+05	3.1E+04

Table I-C.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Complex Terrain

Values for urban and rural areas

Terrain adjusted eff. stack ht. (m)	Antimony (g/hr)	Barium (g/hr)	Lead (g/hr)	Mercury (g/hr)	Silver (g/hr)	Thallium (g/hr)
4.0	1.4E+01	2.4E+03	4.3E+00	1.4E+01	1.4E+02	1.4E+01
6	2.1E+01	3.5E+03	6.2E+00	2.1E+01	2.1E+02	2.1E+01
8	3.0E+01	5.0E+03	9.2E+00	3.0E+01	3.0E+02	3.0E+01
10	4.3E+01	7.6E+03	1.3E+01	4.3E+01	4.3E+02	4.3E+01
12	5.4E+01	9.0E+03	1.7E+01	5.4E+01	5.4E+02	5.4E+01
14	6.8E+01	1.1E+04	2.0E+01	6.8E+01	6.8E+02	6.8E+01
16	7.8E+01	1.3E+04	2.4E+01	7.8E+01	7.8E+02	7.8E+01
18	8.6E+01	1.4E+04	2.6E+01	8.6E+01	8.6E+02	8.6E+01
20	9.6E+01	1.6E+04	2.9E+01	9.6E+01	9.6E+02	9.6E+01
22	1.0E+02	1.8E+04	3.2E+01	1.0E+02	1.0E+03	1.0E+02
24	1.2E+02	1.9E+04	3.5E+01	1.2E+02	1.2E+03	1.2E+02
26	1.3E+02	2.2E+04	3.6E+01	1.3E+02	1.3E+03	1.3E+02

Table I-C.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Noncarcinogenic Metals for Facilities in Complex Terrain

28	1.4E+02	2.4E+04	4.3E+01	1.4E+02	1.4E+03	1.4E+02
30	1.6E+02	2.7E+04	4.6E+01	1.6E+02	1.6E+03	1.6E+02
35	2.0E+02	3.3E+04	5.8E+01	2.0E+02	2.0E+03	2.0E+02
40	2.4E+02	4.0E+04	7.2E+01	2.4E+02	2.4E+03	2.4E+02
45	3.0E+02	5.0E+04	9.0E+01	3.0E+02	3.0E+03	3.0E+02
50	3.6E+02	6.0E+04	1.1E+02	3.6E+02	3.6E+03	3.6E+02
55	4.6E+02	7.6E+04	1.4E+02	4.6E+02	4.6E+03	4.6E+02
60	5.8E+02	9.4E+04	1.7E+02	5.8E+02	5.8E+03	5.8E+02
65	6.8E+02	1.1E+05	2.1E+02	6.8E+02	6.8E+03	6.8E+02
70	7.8E+02	1.3E+05	2.4E+02	7.8E+02	7.8E+03	7.8E+02
75	8.6E+02	1.4E+05	2.6E+02	8.6E+02	8.6E+03	8.6E+02
80	9.6E+02	1.6E+05	2.9E+02	9.6E+02	9.6E+03	9.6E+02
85	1.1E+03	1.8E+05	3.3E+02	1.1E+03	1.1E+04	1.1E+03
90	1.2E+03	2.0E+05	3.6E+02	1.2E+03	1.2E+04	1.2E+03
95	1.4E+03	2.3E+05	4.0E+02	1.4E+03	1.4E+04	1.4E+03
100	1.5E+03	2.6E+05	4.6E+02	1.5E+03	1.5E+04	1.5E+03
105	1.7E+03	2.8E+05	5.0E+02	1.7E+03	1.7E+04	1.7E+03
110	1.9E+03	3.2E+05	5.8E+02	1.9E+03	1.9E+04	1.9E+03
115	2.1E+03	3.6E+05	6.4E+02	2.1E+03	2.1E+04	2.1E+03
120	2.4E+03	4.0E+05	7.2E+02	2.4E+03	310000.0	31000.0

Table I-D.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Carcinogenic Metals for Facilities in Noncomplex Terrain

Values for use in urban areas					Values for use in rural areas			
Terrain adjusted eff. stack ht. (m)	Arsenic (g/hr)	Cadmium (g/hr)	Chromium (g/hr)	Beryll-ium (g/hr)	Arsenic (g/hr)	Cadmium (g/hr)	Chromium (g/hr)	Beryll-ium (g/hr)
4	4.6E-01	1.1E+00	1.7E-01	8.2E-01	2.4E-01	5.8E-01	8.6E-02	4.3E-01
6	5.4E-01	1.3E+00	1.9E-01	9.4E-01	2.8E-01	6.6E-01	1.0E-01	5.0E-01
8	6.0E-01	1.4E+00	2.2E-01	1.1E+00	3.2E-01	7.6E-01	1.1E-01	5.6E-01
10	6.8E-01	1.6E+00	2.4E-01	1.2E+00	3.6E-01	8.6E-01	1.3E-01	6.4E-01
12	7.6E-01	1.8E+00	2.7E-01	1.4E+00	4.3E-01	1.1E+00	1.6E-01	7.8E-01
14	8.6E-01	2.1E+00	3.1E-01	1.5E+00	5.4E-01	1.3E+00	2.0E-01	9.6E-01
16	9.6E-01	2.3E+00	3.5E-01	1.7E+00	6.8E-01	1.6E+00	2.4E-01	1.2E+00
18	1.1E+00	2.6E+00	4.0E-01	2.0E+00	8.2E-01	2.0E+00	3.0E-01	1.5E+00
20	1.2E+00	3.0E+00	4.4E-01	2.2E+00	1.0E+00	2.5E+00	3.7E-01	1.9E+00
22	1.4E+00	3.4E+00	5.0E-01	2.5E+00	1.3E+00	3.2E+00	4.8E-01	2.4E+00
24	1.6E+00	3.9E+00	5.8E-01	2.8E+00	1.7E+00	4.0E+00	6.0E-01	3.0E+00
26	1.8E+00	4.3E+00	6.4E-01	3.2E+00	2.1E+00	5.0E+00	7.6E-01	3.9E+00
28	2.0E+00	4.8E+00	7.2E-01	3.6E+00	2.7E+00	6.4E+00	9.8E-01	5.0E+00
30	2.3E+00	5.4E+00	8.2E-01	4.0E+00	3.5E+00	8.2E+00	1.2E+00	6.2E+00
35	3.0E+00	6.8E+00	1.0E+00	5.4E+00	5.4E+00	1.3E+01	1.9E+00	9.6E+00
40	3.6E+00	9.0E+00	1.3E+00	6.8E+00	8.2E+00	2.0E+01	3.0E+00	1.5E+01
45	4.6E+00	1.1E+01	1.7E+00	8.6E+00	1.1E+01	2.8E+01	4.2E+00	2.1E+01
50	6.0E+00	1.4E+01	2.2E+00	1.1E+01	1.5E+01	3.7E+01	5.4E+00	2.8E+01
55	7.6E+00	1.8E+01	2.7E+00	1.4E+01	2.0E+01	5.0E+01	7.2E+00	3.6E+01
60	9.4E+00	2.2E+01	3.4E+00	1.7E+01	2.7E+01	6.4E+01	9.6E+00	4.8E+01
65	1.1E+01	2.8E+01	4.2E+00	2.1E+01	3.6E+01	8.6E+01	1.3E+01	6.4E+01
70	1.3E+01	3.1E+01	4.6E+00	2.4E+01	4.3E+01	1.0E+02	1.5E+01	7.6E+01
75	1.5E+01	3.6E+01	5.4E+00	2.7E+01	5.0E+01	1.2E+02	1.8E+01	9.0E+01
80	1.7E+01	4.0E+01	6.0E+00	3.0E+01	6.0E+01	1.4E+02	2.2E+01	1.1E+02
85	1.9E+01	4.6E+01	6.8E+00	3.4E+01	7.2E+01	1.7E+02	2.6E+01	1.3E+02
90	2.2E+01	5.0E+01	7.8E+00	3.9E+01	8.6E+01	2.0E+02	3.0E+01	1.5E+02
95	2.5E+01	5.8E+01	9.0E+00	4.4E+01	1.0E+02	2.4E+02	3.6E+01	1.8E+02
100	2.8E+01	6.8E+01	1.0E+01	5.0E+01	1.2E+02	2.9E+02	4.3E+01	2.2E+02
105	3.2E+01	7.6E+01	1.1E+01	5.6E+01	1.4E+02	3.4E+02	5.0E+01	2.6E+02
110	3.6E+01	8.6E+01	1.3E+01	6.4E+01	1.7E+02	4.0E+02	6.0E+01	3.0E+02
115	4.0E+01	9.6E+01	1.5E+01	7.2E+01	2.0E+02	4.8E+02	7.2E+01	3.6E+02
120	4.6E+01	1.1E+02	1.7E+01	8.2E+01	2.4E+02	5.8E+02	8.6E+01	4.3E+02

Table I-E.-Tier I and Tier II Feed Rate and Emissions Screening Limits for Carcinogenic Metals for Facilities in Complex Terrain

Values for use in urban and rural areas

Terrain adjusted eff. stack ht. (m)	Arsenic (g/hr)	Cadmium (g/hr)	Chromium (g/hr)	Beryllium (g/hr)
4	1.1E-01	2.6E-01	4.0E-02	2.0E-01
6	1.6E-01	3.9E-01	5.8E-02	2.9E-01
8	2.4E-01	5.8E-01	8.6E-02	4.3E-01
10	3.5E-01	8.2E-01	1.3E-01	6.2E-01
12	4.3E-01	1.0E+00	1.5E-01	7.6E-01
14	5.0E-01	1.3E+00	1.9E-01	9.4E-01
16	6.0E-01	1.4E+00	2.2E-01	1.1E+00
18	6.8E-01	1.6E+00	2.4E-01	1.2E+00
20	7.6E-01	1.8E+00	2.7E-01	1.3E+00
22	8.2E-01	1.9E+00	3.0E-01	1.5E+00
24	9.0E-01	2.1E+00	3.3E-01	1.6E+00
26	1.0E+00	2.4E+00	3.6E-01	1.8E+00
28	1.1E+00	2.7E+00	4.0E-01	2.0E+00
30	1.2E+00	3.0E+00	4.4E-01	2.2E+00
35	1.5E+00	3.7E+00	5.4E-01	2.7E+00
40	1.9E+00	4.6E+00	6.8E-01	3.4E+00
45	2.4E+00	5.4E+00	8.4E-01	4.2E+00
50	2.9E+00	6.8E+00	1.0E+00	5.0E+00
55	3.5E+00	8.4E+00	1.3E+00	6.4E+00
60	4.3E+00	1.0E+01	1.5E+00	7.8E+00
65	5.4E+00	1.3E+01	1.9E+00	9.6E+00
70	6.0E+00	1.4E+01	2.2E+00	1.1E+01
75	6.8E+00	1.6E+01	2.4E+00	1.2E+01
80	7.6E+00	1.8E+01	2.7E+00	1.3E+01
85	8.2E+00	2.0E+01	3.0E+00	1.5E+01
90	9.4E+00	2.3E+01	3.4E+00	1.7E+01
95	1.0E+01	2.5E+01	4.0E+00	1.9E+01
100	1.2E+01	2.8E+01	4.3E+00	2.1E+01
105	1.3E+01	3.2E+01	4.8E+00	2.4E+01
110	1.5E+01	3.5E+01	5.4E+00	2.7E+01
115	1.7E+01	4.0E+01	6.0E+00	3.0E+01
120	1.9E+01	4.4E+01	6.4E+00	3.3E+01

Appendix B - Tier I Feed Rate Screening Limits for Total Chlorine

	Noncomplex Terrain		Complex Terrain
Terrain-adjusted effective stack height (m)	Urban (g/hr)	Rural (g/hr)	(g/hr)
4	8.2E + 01	4.2E + 01	1.9E + 01
6	9.1E + 01	4.8E + 01	2.8E + 01
8	1.0E + 02	5.3E + 01	4.1E + 01
10	1.2E + 02	6.2E + 01	5.8E + 01
12	1.3E + 02	7.7E + 01	7.2E + 01
14	1.5E + 02	9.1E + 01	9.1E + 01
16	1.7E + 02	1.2E + 02	1.1E + 02
18	1.9E + 02	1.4E + 02	1.2E + 02
20	2.1E + 02	1.8E + 02	1.3E + 02
22	2.4E + 02	2.3E + 02	1.4E + 02
24	2.7E + 02	2.9E + 02	1.6E + 02
26	3.1E + 02	3.7E + 02	1.7E + 02
28	3.5E + 02	4.7E + 02	1.9E + 02
30	3.9E + 02	5.8E + 02	2.1E + 02
35	5.3E + 02	9.6E + 02	2.6E + 02
40	6.2E + 02	1.4E + 03	3.3E + 02
45	8.2E + 02	2.0E + 03	4.0E + 02
50	1.1E + 03	2.6E + 03	4.8E + 02
55	1.3E + 03	3.5E + 03	6.2E + 02
60	1.6E + 03	4.6E + 03	7.7E + 02
65	2.0E + 03	6.2E + 03	9.1E + 02
70	2.3E + 03	7.2E + 03	1.1E + 03
75	2.5E + 03	8.6E + 03	1.2E + 03
80	2.9E + 03	1.0E + 04	1.3E + 03
85	3.3E + 03	1.2E + 04	1.4E + 03
90	3.7E + 03	1.4E + 04	1.6E + 03
95	4.2E + 03	1.7E + 04	1.8E + 03
100	4.8E + 03	2.1E + 04	2.0E + 03
105	5.3E + 03	2.4E + 04	2.3E + 03
110	6.2E + 03	2.9E + 04	2.5E + 03
115	7.2E + 03	3.5E + 04	2.8E + 03
120	8.2E + 03	4.1E + 04	3.2E + 03

Appendix C - Tier II Emission Rate Screening Limits for Free Chlorine and Hydrogen Chloride

Terrain-adjusted effective stack height (m)	Noncomplex terrain				Complex terrain	
	Values for urban areas		Values for rural areas		Values for use in urban and rural areas	
	$C1_2$ (g/hr)	HC1 (g/hr)	$C1_2$ (g/hr)	HC1 (g/hr)	$C1_2$ (g/hr)	HC1 (g/hr)
4	8.2E + 01	1.4E + 03	4.2E + 01	7.3E + 02	1.9E + 01	3.3E + 02
6	9.1E + 01	1.6E + 03	4.8E + 01	8.3E + 02	2.8E + 01	4.9E + 02
8	1.0E + 02	1.8E + 03	5.3E + 01	9.2E + 02	4.1E + 01	7.1E + 02
10	1.2E + 02	2.0E + 03	6.2E + 01	1.1E + 03	5.8E + 01	1.0E + 03
12	1.3E + 02	2.3E + 03	7.7E + 01	1.3E + 03	7.2E + 01	1.3E + 03
14	1.5E + 02	2.6E + 03	9.1E + 01	1.6E + 03	9.1E + 01	1.6E + 03
16	1.7E + 02	2.9E + 03	1.2E + 02	2.0E + 03	1.1E + 02	1.8E + 03
18	1.9E + 02	3.3E + 03	1.4E + 02	2.5E + 03	1.2E + 02	2.0E + 03
20	2.1E + 02	3.7E + 03	1.8E + 02	3.1E + 03	1.3E + 02	2.3E + 03
22	2.4E + 02	4.2E + 03	2.3E + 02	3.9E + 03	1.4E + 02	2.4E + 03
24	2.7E + 02	4.8E + 03	2.9E + 02	5.0E + 03	1.6E + 02	2.8E + 03
26	3.1E + 02	5.4E + 03	3.7E + 02	6.5E + 03	1.7E + 02	3.0E + 03
28	3.5E + 02	6.0E + 03	4.7E + 02	8.1E + 03	1.9E + 02	3.4E + 03
30	3.9E + 02	6.9E + 03	5.8E + 02	1.0E + 04	2.1E + 02	3.7E + 03
35	5.3E + 02	9.2E + 03	9.6E + 02	1.7E + 04	2.6E + 02	4.6E + 03
40	6.2E + 02	1.1E + 04	1.4E + 03	2.5E + 04	3.3E + 02	5.7E + 03
45	8.2E + 02	1.4E + 04	2.0E + 03	3.5E + 04	4.0E + 02	7.0E + 03
50	1.1E + 03	1.8E + 04	2.6E + 03	4.6E + 04	4.8E + 02	8.4E + 03
55	1.3E + 03	2.3E + 04	3.5E + 03	6.1E + 04	6.2E + 02	1.1E + 04
60	1.6E + 03	2.9E + 04	4.6E + 03	8.1E + 04	7.7E + 02	1.3E + 04
65	2.0E + 03	3.4E + 04	6.2E + 03	1.1E + 05	9.1E + 02	1.6E + 04
70	2.3E + 03	3.9E + 04	7.2E + 03	1.3E + 05	1.1E + 03	1.8E + 04
75	2.5E + 03	4.5E + 04	8.6E + 03	1.5E + 05	1.2E + 03	2.0E + 04
80	2.9E + 03	5.0E + 04	1.0E + 04	1.8E + 05	1.3E + 03	2.3E + 04
85	3.3E + 03	5.8E + 04	1.2E + 04	2.2E + 05	1.4E + 03	2.5E + 04
90	3.7E + 03	6.6E + 04	1.4E + 04	2.5E + 05	1.6E + 03	2.9E + 04
95	4.2E + 03	7.4E + 04	1.7E + 04	3.0E + 05	1.8E + 03	3.2E + 04
100	4.8E + 03	8.4E + 04	2.1E + 04	3.6E + 05	2.0E + 03	3.5E + 04
105	5.3E + 03	9.2E + 04	2.4E + 04	4.3E + 05	2.3E + 03	3.9E + 04
110	6.2E + 03	1.1E + 05	2.9E + 04	5.1E + 05	2.5E + 03	4.5E + 04
115	7.2E + 03	1.3E + 05	3.5E + 04	6.1E + 05	2.8E + 03	5.0E + 04
120	8.2E + 03	1.4E + 05	4.1E + 04	7.2E + 05	3.2E + 03	5.6E + 04

Appendix D - Reference Air Concentrations*

Constituent	CAS No.	RAC (ug/m^3)
Acetaldehyde	75-07-0	10
Acetonitrile	75-05-8	10
Acetophenone	98-86-2	100
Acrolein	107-02-8	20
Aldicarb	116-06-3	1
Aluminum Phosphide	20859-73-8	0.3
Allyl Alcohol	107-18-6	5
Antimony	7440-36-0	0.3
Barium	7440-39-3	50
Barium Cyanide	542-62-1	50
Bromomethane	74-83-9	0.8
Calcium Cyanide	592-01-8	30
Carbon Disulfide	75-15-0	200
Chloral	75-87-6	2
Chlorine (free)		0.4
2-Chloro-1,3-butadiene	126-99-8	3
Chromium III	16065-83-1	1000
Copper Cyanide	544-92-3	5
Cresols	1319-77-3	50
Cumene	98-82-8	1
Cyanide (free)	57-12-15	20
Cyanogen	460-19-5	30
Cyanogen Bromide	506-68-3	80
Di-n-butyl Phthalate	84-74-2	100
o-Dichlorobenzene	95-50-1	10
p-Dichlorobenzene	106-46-7	10
Dichlorodifluoromethane	75-71-8	200
2,4-Dichlorophenol	120-83-2	3
Diethyl Phthalate	84-66-2	800
Dimethoate	60-51-5	0.8
2,4-Dinitrophenol	51-28-5	2
Dinoseb	88-85-7	0.9
Diphenylamine	122-39-4	20
Endosulfan	115-29-1	0.05
Endrin	72-20-8	0.3
Fluorine	7782-41-4	50
Formic Acid	64-18-6	2000

Constituent	CAS No.	RAC (ug/m^3)
Glycidyaldehyde	765-34-4	0.3
Hexachlorocyclopentadiene	77-47-4	5
Hexachlorophene	70-30-4	0.3
Hydrocyanic Acid	74-90-8	20
Hydrogen Chloride	7647-01-1	7
Hydrogen Sulfide	7783-06-4	3
Isobutyl Alcohol	78-83-1	300
Lead	7439-92-1	0.09
Maleic Anyhdride	108-31-6	100
Mercury	7439-97-6	0.3
Methacrylonitrile	126-98-7	0.1
Methomyl	16752-77-5	20
Methoxychlor	72-43-5	50
Methyl Chlorocarbonate	79-22-1	1000
Methyl Ethyl Ketone	78-93-3	80
Methyl Parathion	298-00-0	0.3
Nickel Cyanide	557-19-7	20
Nitric Oxide	10102-43-9	100
Nitrobenzene	98-95-3	0.8
Pentachlorobenzene	608-93-5	0.8
Pentachlorophenol	87-86-5	30
Phenol	108-95-2	30
M-Phenylenediamine	108-45-2	5
Phenylmercuric Acetate	62-38-4	0.075
Phosphine	7803-51-2	0.3
Phthalic Anhydride	85-44-9	2000
Potassium Cyanide	151-50-8	50
Potassium Silver Cyanide	506-61-6	200
Pyridine	110-86-1	1
Selenious Acid	7783-60-8	3
Selenourea	630-10-4	5
Silver	7440-22-4	3
Silver Cyanide	506-64-9	100
Sodium Cyanide	143-33-9	30
Strychnine	57-24-9	0.3
1,2,4,5-Tetrachlorobenzene	95-94-3	0.3
2,3,4,6-Tetrachlorophenol	58-90-2	30
Tetraethyl Lead	78-00-2	0.0001
Tetrahydrofuran	109-99-9	10

Constituent	CAS No.	RAC (ug/m^3)
Thallic Oxide	1314-32-5	0.3
Thallium	7440-28-0	0.5
Thallium (I) Acetate	563-68-8	0.5
Thallium (I) Carbonate	6533-73-9	0.3
Thallium (I) Chloride	7791-12-0	0.3
Thallium (I) Nitrate	10102-45-1	0.5
Thallium Selenite	12039-52-0	0.5
Thallium (I) Sulfate	7446-18-6	0.075
Thiram	137-26-8	5
Toluene	108-88-3	300
1,2,4-Trichlorobenzene	120-82-1	20
Trichloromonofluoromethane	75-69-4	300
2.4.5-Trichlorophenol	95-95-4	100
Vanadium Pentoxide	1314-62-1	20
Warfarin	81-81-2	0.3
Xylenes	1330-20-7	80
Zinc Cyanide	557-21-1	50
Zinc Phosphide	1314-84-7	0.3

FOOTNOTE: *The RAC for other Chapter 2, Appendix H constituents not listed herein or in Appendix E of this part is 0.1 ug/m^3.

Appendix E - Risk Specific Doses (10^{-5})

Constituent	CAS No.	Unit risk (m3/ug)	RsD (ug/m3)
Acrylamide	79-06-1	1.3E-03	7.7E-03
Acrylonitrile	107-13-1	6.8E-05	1.5E-01
Aldrin	309-00-2	4.9E-03	2.0E-03
Aniline	62-53-3	7.4E-06	1.4E+00
Arsenic	7440-38-2	4.3E-03	2.3E-03
Benz(a)anthracene	56-55-3	8.9E-04	1.1E-02
Benxene	71-43-2	8.3E-06	1.2E+00
Benzidine	92-87-5	6.7E-02	1.5E-04
Benzo(a)pyrene	50-32-8	3.3E-03	3.0E-03
Beryllium	7440-41-7	2.4E-03	4.2E-03
Bis(2-chloroethyl)ether	111-44-4	3.3E-04	3.0E-02
Bis(chloromethyl)ether	542-88-1	6.2E-02	1.6E-04
Bis(2-ethylhexyl)-phthalate	117-81-7	2.4E-07	4.2E+01
1,3-Butadiene	106-99-0	2.8E-04	3.6E-02
Cadmium	7440-43-9	1.8E-03	5.6E-03
Carbon Tetrachloride	56-23-5	1.5E-05	6.7E-01
Chlordane	57-74-9	3.7E-04	2.7E-02
Chloroform	67-66-3	2.3E-05	4.3E-01
Chloromethane	74-87-3	3.6E-06	2.8E+00
Chromium VI	7440-47-3	1.2E-02	8.3E-04
DDT	50-29-3	9.7E-05	1.0E-01
Dibenz(a,h)anthracene	53-70-3	1.4E-02	7.1E-04
1,2-Dibromo-3-chloropropane	96-12-8	6.3E-03	1.6E-03
1,2-Dibromoethane	106-93-4	2.2E-04	4.5E-02
1,1-Dichloroethane	75-34-3	2.6E-05	3.8E-01
1,2-Dichloroethane	107-06-2	2.6E-05	3.8E-01
1,1-Dichloroethylene	75-35-4	5.0E-05	2.0E-01
1,3-Dichloropropene	542-75-6	3.5E-01	2.9E-05
Dieldrin	60-57-1	4.6E-03	2.2E-03
Diethylstilbestrol	56-53-1	1.4E-01	7.1E-05
Dimethylnitrosamine	62-75-9	1.4E-02	7.1E-04
2,4-Dinitrotoluene	121-14-2	8.8E-05	1.1E-01
1,2-Diphenylhydrazine	122-66-7	2.2E-04	4.5E-02
1,4-Dioxane	123-91-1	1.4E-06	7.1E+00
Epichlorohydrin	106-89-8	1.2E-06	8.3E+00
Ethylene Oxide	75-21-8	1.0E-04	1.0E-01
Ethylene Dibromide	106-93-4	2.2E-04	4.5E-02
Formaldehyde	50-00-0	1.3E-05	7.7E-01
Heptachlor	76-44-8	1.3E-03	7.7E-03

Constituent	CAS No.	Unit risk (m3/ug)	RsD (ug/m3)
Heptachlor Epoxide	1024-57-3	2.6E-03	3.8E-03
Hexachlorobenzene	118-74-1	4.9E-04	2.0E-02
Hexachlorobutadiene	87-68-3	2.0E-05	5.0E-01
Alpha-hexachloro-cyclo-hexane	319-84-6	1.8E-03	5.6E-03
Beta-hexachloro-cyclohexane	319-85-7	5.3E-04	1.9E-02
Gamma-hexachloro-cyclo-hexane	58-89-9	3.8E-04	2.6E-02
Hexachlorocyclo-hexane, Technical		5.1E-04	2.0E-02
Hexachlorodibenxo-p-dioxin(1,2 Mixture)		1.3E+0	7.7E-06
Hexachloroethane	67-72-1	4.0E-06	2.5E+00
Hydrazine	302-01-2	2.9E-03	3.4E-03
Hydrazine Sulfate	302-01-2	2.9E-03	3.4E-03
3-Methylcholanthrene	56-49-5	2.7E-03	3.7E-03
Methyl Hydrazine	60-34-4	3.1E-04	3.2E-02
Methylene Chloride	75-09-2	4.1E-06	2.4E+00
4,4'-Methylene-bis-2-chloroaniline	101-14-4	4.7E-05	2.1E-01
Nickel	7440-02-0	2.4E-04	4.2E-02
Nickel Refinery Dust	7440-02-0	2.4E-04	4.2E-02
Nickel Subsulfide	12035-72-2	4.8E-04	2.1E-02
2-Nitropropane	79-46-9	2.7E-02	3.7E-04
N-Nitroso-n-butylamine	924-16-3	1.6E-03	6.3E-03
N-Nitroso-n-methylurea	684-93-5	8.6E-02	1.2E-04
N-Nitrosodiethylamine	55-18-5	4.3E-02	2.3E-04
N-Nitrosopyrrolidine	930-55-2	6.1E-04	1.6E-02
Pentachloronitrobenzene	82-68-8	7.3E-05	1.4E-01
PCBs	1336-36-3	1.2E-03	8.3E-03
Pronamide	23950-58-5	4.6E-06	2.2E+00
Reserpine	50-55-5	3.0E-03	3.3E-03
2,3,7,8-Tetrachloro-dibenzo-p-dioxin	1746-01-6	4.5E+01	2.2E-07
1,1,2,2-Tetrachloroethane	79-34-5	5.8E-05	1.7E-01
Tetrachloroethylene	127-18-4	4.8E-07	2.1E+01
Thiourea	62-56-6	5.5E-04	1.8E-02
1,1,2-Trichloroethane	79-00-5	1.6E-05	6.3E-01
Trichloroethylene	79-01-6	1.3E-06	7.7E+00
2,4,6-Trichlorophenol	88-06-2	5.7E-06	1.8E+00
Toxaphene	8001-35-2	3.2E-04	3.1E-02
Vinyl Chloride	75-01-4	7.1E-06	1.4E+00

Appendix F - Stack Plume Rise

[Estimated Plume Rise (in Meters) Based on Stack Exit Flow Rate and Gas Temperature]

	Exhaust Temperature (KE)										
Flow rate (m3/s)	<325	325-349	350-399	400-449	450-499	500-599	600-699	700-799	800-999	1000-1499	>1499
<0.5	0	0	0	0	0	0	0	0	0	0	0
0.5-0.9	0	0	0	0	0	0	0	0	1	1	1
1.0-1.9	0	0	0	0	1	1	2	3	3	3	4
2.0-2.9	0	0	1	3	4	4	6	6	7	8	9
3.0-3.9	0	1	2	5	6	7	9	10	11	12	13
4.0-4.9	1	2	4	6	8	10	12	13	14	15	17
5.0-7.4	2	3	5	8	10	12	14	16	17	19	21
7.5-9.9	3	5	8	12	15	17	20	22	22	23	24
10.0-12.4	4	6	10	15	19	21	23	24	25	26	27
12.5-14.9	4	7	12	18	22	23	25	26	27	28	29
15.0-19.9	5	8	13	20	23	24	26	27	28	29	31
20.0-24.9	6	10	17	23	25	27	29	30	31	32	34
25.0-29.9	7	12	20	25	27	29	31	32	33	35	36
30.0-34.9	8	14	22	26	29	31	33	35	36	37	39
35.0-39.9	9	16	23	28	30	32	35	36	37	39	41
40.0-49.9	10	17	24	29	32	34	36	38	39	41	42
50.0-59.9	12	21	26	31	34	36	39	41	42	44	46
60.0-69.9	14	22	27	33	36	39	42	43	45	47	49
70.0-79.9	16	23	29	35	38	41	44	46	47	49	51
80.0-89.9	17	25	30	36	40	42	46	48	49	51	54
90.0-99.9	19	26	31	38	42	44	48	50	51	53	56
100.0-119.9	21	26	32	39	43	46	49	52	53	55	58
120.0-139.9	22	28	35	42	46	49	52	55	56	59	61
140.0-159.9	23	30	36	44	48	51	55	58	59	62	65
160.0-179.9	25	31	38	46	50	54	58	60	62	65	67
180.0-199.9	26	32	40	48	52	56	60	63	65	67	70
>199.9	26	33	41	49	54	58	62	65	67	69	7

Appendix G - Health-Based Limits for Exclusion of Waste-Derived Residues

Reserved ^.

Appendix H - Potential PICs for Determination of Exclusion of Waste-Derived Residues

PICs Found in Stack Effluents

Volatiles	Semivolatiles
Benzene	Bis(2-ethylhexyl)phthalate
Toluene	Naphthalene
Carbon tetrachloride	Phenol
Chloroform	Diethyl phthalate
Methylene chloride	Butyl benzyl phthalate
Trichloroethylene	2,4-Dimethylphenol
Tetrachloroethylene	o-Dichlorobenzene
1,1,1-Trichloroethane	m-Dichlorobenzene
Chlorobenzene	p-Dichlorobenzene
cis-1,4-Dichloro-2-butene	Hexachlorobenzene
Bromochloromethane	2,4,6-Trichlorophenol
Bromodichloromethane	Fluoranthene
Bromoform	o-Nitrophenol
Bromomethane	1,2,4-Trichlorobenzene
Methylene bromide	o-Chlorophenol
Methyl ethyl ketone	Pentachlorophenol
	Pyrene
	Dimethyl phthalate
	Mononitrobenzene
	2,6-Toluene diisocyanate

Appendix I to Chapter 12, Sections 1 through 8 - Methods Manual for Compliance With the BIF Regulations

Burning Hazardous Waste in Boilers and Industrial Furnaces

Table of Contents

SECTION 1.0 INTRODUCTION

This document presents required methods for demonstrating compliance uith the Department regulations for boilers and industrial furnaces (BIFs) burning hazardous waste (see Chapter 12, Section 8 of these rules and regulations). Included in this document are:

1. Performance Specifications for Continuous Emission Monitoring (CEM) of Carbon Monoxide, Oxygen, and Hydrocarbons in Stack Gases.

2. Sampling and Analytical (S&A) Methods for Multiple Metals, Hexavalent Chromium, HCl and Chlorine, Polychlorinated Dibenzo-p-dioxins and Dibenzofurans, and Aldehydes and Ketones.

3. Procedures for Estimating the Toxicity Equivalency of Chlorinated Dibenzo-p-dioxin and Dibenzofuran Congeners.

4. Hazardous Waste Combustion Air Quality Screening Procedures (HWCAQSP).

5. Simplified Land Use Classification Procedure for Compliance vith Tier I and Tier II Limits.

6. Statistical Methodology for Bevill Residue Determinations.

7. Procedures for Determining Default Values for Air Pollution Control System Removal Efficiencies.

8. Procedures for Determining Default Values for Partitioning of Metals, Ash, and Total Chloride/Chlorine.

9. Alternate Methodology for Implementing Metals Controls.

Additional methods referenced in Chapter 12, Section 8 of these rules and regulations but not included in this document can be found in 40 CFR parts 60 and 61, and "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (SW-846).

The CEM performance specifications of Section 2.0, the S&A methods of Section 3.0 and the toxicity equivalency procedure for dioxins and furans of Section 4.0 are required procedures for determining compliance with BIF regulations. The CEM performance specifications and the S&A methods are interim. The finalized CEM performance specifications and methods will be published in SW-846 or 40 CFR parts 60 and 6l.

SECTION 2.0 PERFORMANCE SPECIFICATIONS FOR CONTINUOUS EMISSION MONITORING SYSTEMS

2.1 Performance Specifications for Continuous Emission Monitoring of Carbon Monoxide and Oxygen for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste

2.1.1 Applicability and Principle

2.1.1.1 Applicability. These performance specifications apply to carbon monoxide (CO) and oxygen (O_2) continuous emission monitoring systems (CEMSs) installed on incinerators, boilers, and industrial furnaces burning hazardous waste. The specifications include procedures which are intended to be used to evaluate the acceptability of the CEMS at the time of its installation or whenever specified in regulations or permits. The procedures are not designed to evaluate CEMS performance over an extended period of time. The source owner or operator is responsible for the proper calibration, maintenance, and operation of the CEMS at all times.

2.1.1.2 Principle. Installation and measurement location specifications, performance and equipment specifications, test and data reduction procedures, and brief quality assurance guidelines are included in the specifications. Calibration drift, relative accuracy, calibration error, and response time tests are conducted to determine conformance of the CEMS with the specifications.

2.1.2 Definitions

2.1.2.1 Continuous Emission Monitoring System (CEMS). A continuous monitor is one in which the sample to be analyzed passes the measurement Section of the analyzer without interruption, and which evaluates the detector response to the sample at least once each 15 seconds and computes and records the results at least every 60 seconds. A CEMS consists of all the equipment used to acquire data and includes the sample extraction and transport hardware, the analyzer(s), and the data recording/processing hardware and software.

2.1.2.2 Monitoring System Types. The specifications require CEMSs capable of accepting calibration gases. Alternative system designs may be used if approved by the Director. There are two basic types of monitoring systems: extractive and in-situ.

2.1.2.2.1 Extractive. Systems that use a pump or other mechanical, pneumatic, or hydraulic means to draw a sample of the stack or flue gas and convey it to a remotely located analyzer.

2.1.2.2.2 In-situ. Systems that perform an analysis without removing a sample from the stack. Point in-situ analyzers place the sensing or detecting element directly in the flue gas stream. Cross-stack in-situ analyzers measure the parameter of interest by placing a source beam on one side of the stack and the detector (in single-pass instruments) or a retroreflector (in double-pass instruments) on the other side, and measuring the parameter of interest (e.g., CO) by the attenuation of the beam by the gas in its path.

2.1.2.3 Instrument Measurement Range. The difference between the minimum and maximum concentration that can be measured by a specific instrument. The minimum is often stated or assumed to be zero and the range expressed only as the maximum.

2.1.2.4 Span or Span Value. Full scale instrument measurement range.

2.1.2.5 Calibration Drift (CD). The difference in the CEMS output readings from the established reference value after a stated period of operation during which no unscheduled maintenance, repair, or adjustment takes place. A CD test is performed to demonstrate the stability of the CEMS calibration over time.

2.1.2.6 Response Time. The time interval between the start of a step change in the system input (e.g., change of calibration gas) and the time when the data recorder displays 95 percent of the final value.

2.1.2.7 Accuracy. A measure of agreement between a measured value and an accepted or true value, expressed as the percentage difference between the true and measured values relative to the true value. For these performance specifications, accuracy is checked by conducting a calibration error (CE) test and a relative accuracy (RA) test. Certain facilities, such as those using solid waste or batch-fed processes, may observe long periods of almost no CO emissions with brief, high-level CO emission spikes. These facilities, as well as facilities whose CO emissions never exceed 5-10 ppm, may need to be exempted from the RA requirement because the RA test procedure cannot ensure acquisition of meaningful test results under these conditions. An alternative procedure for accuracy determination is described in Section 2.1.9.

2.1.2.8 Calibration Error (CE). The difference between the concentration indicated by the CEMS and the known concentration of the cylinder gas. A CE test procedure is performed to document the accuracy and linearity of the monitoring equipment over the entire measurement range.

2.1.2.9 Relative Accuracy (RA). A comparison of the CEMS response to a value measured by a performance test method (PTM). The PA test is used to validate the calibration technique and verify the ability of the CEMS to provide representative and accurate measurements.

2.1.2.10 Performance Test Method (PTM). The sampling and analysis procedure used to obtain reference measurements for comparison to CEMS measurements. The applicable test methods are Method 10, 10A, or 10B (for the determination of CO) and Method 3 or 3A (for the determination of 0^2). These methods are found in 40 CFR part 60, appendix A.

2.1.2.11 Performance Specification Test (PST) Period. The period during which CD, CE, response time, and RA tests are conducted.

2.1.2.12 Centroidal Area. A concentric area that is geometrically similar to the stack or duct cross Section and is no greater than 1 percent of the stack or duct cross-Sectional area.

2.1.3 Installation and Measurement Location Specifications

2.1.3.1 CEMS Installation and Measurement Locations. The CEMS shall be installed in a location in which measurements representative of the source's emissions can be obtained. The optimum location of the sample interface for the CEMS is determined by a number of factors, including ease of access for calibration and maintenance, the degree to which sample conditioning will be required, the degree to which it represents total emissions, and the degree to which it represents the combustion situation in the firebox. The location should be as free from in-leakage influences as possible and reasonably free from severe flow disturbances. The sample location should be at least two equivalent duct diameters downstream from the nearest control device, point of pollutant generation, or other point at which a change in the pollutant concentration or emission rate occurs and at least 0.5 diameter upstream from the exhaust or control device. The equivalent duct diameter is calculated as per 40 CFR part 60, appendix A, method 1, Section 2.1. If these criteria are not achievable or if the location is otherwise less than optimum, the possibility of stratification should be checked as described in Section 2.1.3.3 to determine whether the location would cause failure of the relative accuracy test.

2.1.3.1.1 For extractive or point in-situ CEMSs, the measurement point should be within or centrally located over the centroidal area of the stack or duct cross Section.

2.1.3.1.2 For cross-stack CEMSs, the effective measurement path should (1) have at least 70 percent of the path within the inner 50 percent of the stack or duct cross-Sectional area or (2) be centrally located over any part of the centroidal area.

2.1.3.1.3 Both the CO and O_2 monitors should be installed at the same general location. If this is not possible, they may be installed at different locations if the effluent gases at both sample locations are not stratified and there is no in-leakage of air between sampling locations.

2.1.3.2 Performance Test Method (PTM) Measurement Location and Traverse Points.

2.1.3.2.1 Select an accessible PTM measurement point at least two equivalent diameters downstream from the nearest control device, the point of CO generation, or other point at which a change in the CO concentration may occur, and at least a half equivalent diameter upstream from the effluent exhaust or control device. When pollutant concentration changes are due solely to diluent leakage (e.g., air heater leakages) and CO and O_2 are simultaneously measured at the same location, one half diameter may be used in place of two equivalent diameters. The CEMS and PTM locations need not be the same.

2.1.3.2.2 Select traverse points that ensure acquisition of representative samples over the stack or duct cross Section. At a minimum, establish a measurement line that passes through the centroidal area in the direction of any expected stratification. If this line interferes with the CEMS measurements, displace the line up to 30 cm (or 5 percent of the equivalent diameter of the cross Section, whichever is less) from the centroidal area. Locate three traverse points at 17, 50, and 83 percent of the measurement line. If the measurement line is no longer than 2.4 meters and pollutant stratification is not expected, the tester may choose to locate the three traverse points on the line at 0.4, 1.2, and 2.0 meters from the stack or duct wall. This option must not be used at a site located within eight equivalent diameters downstream of a flow disturbance. The tester may select other traverse points, provided that they can be shown to the satisfaction of the Director to provide a representative sample over the stack or duct cross-Section. Conduct all necessary PTM tests within 3 cm of the selected traverse points. Sampling must not be performed within 3 cm of the duct or stack inner wall.

2.1.3.3 Stratification Test Procedure. Stratification is defined as a difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall. To determine whether effluent stratification exists, a dual probe system should be used to determine the average effluent concentration while measurements at each traverse point are being made. One probe, located at the stack or duct centroid, is used as a stationary reference point to indicate the change in effluent concentration over time. The second probe is used for sampling at the traverse points specified in method 1, appendix A, 40 CFR part 60. The monitoring system samples sequentially at the reference and traverse points throughout the testing period for five minutes at each point.

2.1.4 CEMS Performance and Equipment Specifications

Table 2.1-1 summarizes the performance specifications for the CEMSs. Two sets of standards for CO are given; one for low-range and another for high-range measurements. The high-range specifications relate to measurement and quantification of short duration high concentration peaks, while the low-range specifications relate to the overall average operating condition of the burning device. The dual-range specifications can be met by using (1) one analyzer for each range, (2) a dual range unit, or (3) a single measurement range instrument capable of meeting both specifications with a single unit. Adjustments cannot be made to the analyzer between determinations of low- and high-level accuracy within the single measurement range. In the second case, when the concentration exceeds the span of the lower range, the data acquisition system recorder shall switch to the high range automatically.

2.1.4.1 CEMS Span Value. In order to measure high and low concentrations with the same or similar degree of accuracy, the maximum ranges (span values) are specified for low and high range analyzers. The span values are listed in Table 2.1-2. Tier I and Tier II format definitions are established in Chapter 12, Section 8 of these rules and regulations Chapter 12, Section 8 of these rules and regulations.

Table 2.1-1-Performance Specifications of CO and O_2 Monitors

Parameter	CO monitors		O_2 monitors
	Low range	High range	
Calibration drift 24 hours.	#6 ppm[1]	#90 ppm	#0.5% O_2
Calibration error.	#10 ppm[1]	#150 ppm	#0.5% O_2
Response time.	#2 min	#2 min	#2 min
Relative accuracy[2].	(3)	(3)	(incorporated in CO RA calculation)

FOOTNOTE: [1]For Tier II, CD and CE are .3% and .5% of twice the permit limit, respectively.
FOOTNOTE: [2]Expressed as the sum of the mean absolute value plus the 95% confidence interval of a series of measurements.
FOOTNOTE: [3]The greater of 10% of PTM or 10 ppm.

Table 2.1-2-CEMS Span Values for CO and O_2 Monitors

	CO monitors		
	Low range (ppm)	High range (ppm)	O_2 monitors (percent)
Tier I rolling average format.	200	3,000	25
Tier II rolling average format.	2 x permit limit.	3,000	25

2.1.4.2 Daily Calibration Gas Values. The owner or operator must choose calibration gas concentrations (or calibration filters for in-situ systems) that include zero and high-level calibration values for the daily calibration checks. For a single measurement range monitor, three CO calibration gas concentrations (or calibration filters for in-situ systems) shall be used, i.e., the zero and high-level concentrations of the low-range CO analyzer and the high-level concentration of the high-range CO analyzer.

2.1.4.2.1 The zero level for the CO or O_2 analyzer may be between zero and 20 percent of the span value, e.g., 0-40 ppm for low-range CO analyzer, 0-600 ppm for the high-range CO analyzer, and 0-5 percent for the O_2 analyzer (for Tier I).

2.1.4.2.2 The high-level concentration for the CO or O_2 analyzer shall be between 50 and 90 percent of the span value, i.e., 100-180 ppm for the low-range CO analyzer, 1500-2700 ppm for the high-range CO analyzer, and 12.5-22.5 percent O_2 for the O_2 analyzer.

2.1.4.3 Data Recorder Scale. The strip chart recorder, computer, or digital recorder must be capable of recording all readings within the CEMS's measurement range and shall have a resolution of 0.5 percent of span value, i.e., 1 ppm CO for low-range CO analyzer, 15 ppm CO for high-range CO analyzer, and 0.1 percent O_2 for the O_2 analyzer.

2.1.4.4 Response Time. The response time for the CO or O_2 monitor shall not exceed 2 minutes to achieve 95 percent of the final stable value.

2.1.4.5 Calibration Drift. The CEMS must allow the determination of CD at the zero and high-level values. The CD must be determined separately for CO and O_2 monitors in terms of concentration. The CO CEMS calibration response must not drift or deviate from the reference value of the calibration gas (or calibration filters for in-situ systems) by more than 3 percent of the span value after each 24-hour period of the 7-day test, i.e., 6 ppm CO for the low-range analyzer (Tier I) and 90 ppm for the high-range analyzer, at both zero and high levels. The O_2 monitor calibration response must not drift or deviate from the reference value by more than 0.5 percent O_2 at both zero and high levels.

2.1.4.6 Relative Accuracy. The result of the PA test of the CO CEMS (which incorporates the O_2 monitor) must be no greater than 10 percent of the mean value of the PTM results or must be within 10 ppm CO of the PTM results, whichever is less restrictive. The ppm CO concentration shall be corrected to 7 percent O_2 before calculating the RA.

2.1.4.7 Calibration Error. The mean difference between the CEMS and reference values at all three test points (see Table 2.1-3) must be no greater than 5 percent of span value for CO monitors (i.e., 10 ppm CO for low range Tier I CO analyzers and 150 ppm CO for high range CO analyzers) and 0.5 percent for O_2 analyzers.

2.1.4.8 Measurement and Recording Frequency. The sample to be analyzed shall pass through the measurement Section of the analyzer without interruption. The detector shall measure the sample concentration at least once every 15 seconds. An average emission rate shall be computed and recorded at least once every 60 seconds.

2.1.4.9 Hourly Rolling Average Calculation. The CEMS shall calculate every minute an hourly rolling average, which is the arithmetic mean of the 60 most recent 1-minute average values.

2.1.4.10 Retest. If the CEMS produces results within the specified criteria, the test is successful. If the CEMS does not meet one or more of the criteria, the necessary corrections must be made and the performance tests repeated.

2.1.5 Test Periods

2.1.5.1 Pretest Preparation Period. Install the CEMS, prepare the PTM test site according to the specifications in Section 2.1.3, and prepare the CEMS for operation and calibration according to the manufacturer's written instructions. A pretest conditioning period similar to that of the 7-day CD test is recommended to verify the operational status of the CEMS.

2.1.5.2 Calibration Drift Test Period. While the facility is operating under normal conditions, determine the CD at 24-hour intervals for seven consecutive days according to the procedure given in Section 2.1.6.1. All CD determinations must be made following a 24-hour period during which no unscheduled maintenance, repair, or adjustment takes place. If the combustion unit is taken out of service during the test period, record the onset and duration of the downtime and continue the calibration drift test when the unit resumes operation.

2.1.5.3 Relative Accuracy Test Period. Conduct the RA test according to the procedure in Section 2.1.6.4 while the facility is operating under normal conditions. RA testing for CO and O_2 shall be conducted simultaneously so that the results can be calculated for CO corrected to 7 percent O_2. The RA test shall be conducted during the CD test period. It is emphasized that during the CD test period, no adjustments or repairs may be made to the CEMS other than routine calibration adjustments performed immediately following the daily CD determination.

2.1.5.4 Calibration Error Test and Response Time Test Periods. Conduct the CE and response time tests during the CD test period.

2.1.6 Performance Specification Test Procedures

2.1.6.1 Calibration Drift Test.

2.1.6.1.1 Sampling Strategy. Conduct the CD test for all monitors at 24-hour intervals for seven consecutive days using calibration gases at the two (or three, if applicable) concentration levels specified in Section 2.1.4.2. Introduce the calibration gases into the sampling system as close to the sampling probe outlet as practical. The gas shall pass through all filters, scrubbers, conditioners, and other CEMS components used during normal sampling. If periodic automatic or manual adjustments are made to the CEMS zero and calibration settings, conduct the CD test immediately before these adjustments, or conduct it in such a way that the CD can be determined. Record the CEMS response and subtract this value from the reference (calibration gas) value. To meet the specification, none of the differences shall exceed the limits specified in Table 2.1-1.

2.1.6.1.2 Calculations. Summarize the results on a data sheet. An example is shown in Figure 2.1-1. Calculate the differences between the CEMS responses and the reference values.

2.1.6.2 Response Time. Check the entire CEMS including sample extraction and transport, sample conditioning, gas analyses, and the data recording.

2.1.6.2.1 Introduce zero gas into the system. For extractive systems, introduce the calibration gases at the probe as near to the sample location as possible. For in-situ system, introduce the zero gas at a point such that all components active in the analysis are tested. When the system output has stabilized (no change greater than 1 percent of full scale for 30 seconds), switch to monitor stack effluent and wait for a stable value. Record the time (upscale response time) required to reach 95 percent of the final stable value.

2.1.6.2.2 Next, introduce a high-level calibration gas and repeat the above procedure. Repeat the entire procedure three times and determine the mean upscale and downscale response times. The longer of the two means is the system response time.

2.1.6.3 Calibration Error Test Procedure.

2.1.6.3.1 Sampling Strategy. Challenge each monitor (both low- and high-range CO and O_2) with zero gas and EPA Protocol 1 cylinder gases at three measurement points within the ranges specified in Table 2.1-3.

Table 2.1-3-Calibration Error Concentration Ranges for Tier I

	GAS Concentration Ranges	
	CO, ppm	

Measurement point	Low range[1]	High range	O_2 percent
1.0	0-40	0-600	0-2
2	60-80	900-1200	8-10
3	140-160	2100-2400	14-16

FOOTNOTE: [1] For Tier II, the CE specifications for the low-range CO CEMS are 0-20%, 30-40%, and 70-80% of twice the permit limit.

SOURCE:	**DATE:**
MONITOR:	**LOCATION:**
SERIAL NUMBER:	**SPAN:**

LOW RANGE	
HIGH RANGE	

	DAY	**DATE**	**TIME**	**CALIBRATION VALUE**	**MONITOR RESPONSE**	**DIFFERENCE**	**PERCENT OF SPAN***
ZERO/ LOW LEVEL	**1**						
	2						
	3						
	4						
	5						
	6						
	7						
HIGH LEVEL	**1**						
	2						
	3						
	4						
	5						
	6						
	7						

***Acceptance Criteria: $\leq$ 5% of span each day for seven days.**

Figure 2.1-1 Calibration Drift Determination

2.1.6.3.1.1 If a single measurement range is used, the calibration gases used in the daily CD checks (if they are Protocol 1 cylinder gases and meet the criteria in Section 2.1.6.3.1) may be used for determining CE.

2.1.6.3.1.2 Operate each monitor in its normal sampling mode as nearly as possible. The calibration gas shall be injected into the sample system as close to the sampling probe outlet as practical and should pass through all CEMS components used during normal sampling. Challenge the CEMS three non-consecutive times at each measurement point and record the responses. The duration of each gas injection should be sufficient to ensure that the CEMS surfaces are conditioned.

2.1.6.3.2 Calculations. Summarize the results on a data sheet. An example data sheet is shown in Figure 2.1-2. Average the differences between the instrument response and the certified cylinder gas value for each gas. Calculate three CE results (five CE results for a single-range CO CEMS) according to Equation 5 (Section 2.1.7.5). No confidence coefficient is used in CE calculations.

2.1.6.4 Relative Accuracy Test Procedure.

2.1.6.4.1 Sampling Strategy for PTM tests. Conduct the PTM tests in such a way that they will yield measurements representative of the emissions from the source and can be correlated to the CEMS data. Although it is preferable to conduct the CO, diluent, and moisture (if needed) simultaneously, moisture measurements that are taken within a 60-minute period which includes the simultaneous CO and O_2 measurements may be used to calculate the dry CO concentration.

[Note: At times, CEMS RA tests may be conducted during incinerator performance tests. In these cases, PTM results obtained during CEMS RA tests may be used to determine compliance with incinerator emissions limits as long as the source and test conditions are consistent with the applicable regulations.]

SOURCE:	**DATE:**
MONITOR:	**LOCATION:**
SERIAL NUMBER:	**SPAN:**

LOW RANGE	
HIGH RANGE	

RUN NUMBER	**CALIBRATION VALUE**	**MONITOR RESPONSE**	**DIFFERENCE**		
			Zero/Low	**Mid**	**High**
1 - Zero				▨	▨
2 - Mid			▨		▨
3 - High			▨	▨	
4 - Mid			▨		▨
5 - Zero				▨	▨
6 - High			▨	▨	
7 - Zero				▨	▨
8 - Mid			▨		▨
9 - High			▨	▨	
		MEAN DIFFERENCE =			
		CALIBRATION ERROR =	%	%	%

Figure 2.1-2 Calibration Error Determination

2.1.6.4.2 Performance Test Methods.

2.1.6.4.2.1 Unless otherwise specified in the regulations, method 3 or 3A and method 10, 10A, or 10B (40 CFR part 60, appendix A) are the test methods for O_2 and CO, respectively. Make a sample traverse of at least 21 minutes, sampling for 7 minutes at each of three traverse points (see Section 3.2).

2.1.6.4.2.2 When the installed CEMS uses a nondispersive infrared (NDIR) analyzer, method 10 shall use the alternative interference trap specified in Section 10.1 of the method. An option, which may be approved by the Director in certain cases, would allow the test to be conducted using method 10 without the interference trap. Under this option, a laboratory interference test is performed for the analyzer prior to the field test. The laboratory interference test includes the analysis of SO_2, NO, and CO_2 calibration gases over the range of expected effluent concentrations. Acceptable performance is indicated if the CO analyzer response to each of the gases is less than 1 percent of the applicable measurement range of the analyzer.

2.1.6.4.3 Number of PTM Tests. Conduct a minimum of nine sets of all necessary PTM tests. If more than nine sets are conducted, a maximum of three sets may be rejected at the tester's discretion. The total number of sets used to determine the RA must be greater than or equal to nine. All data, including the rejected data, must be reported.

2.1.6.4.4 Correlation of PTM and CEMS Data. The time and duration of each PTM test run and the CEMS response time should be considered in correlating the data. Use the CEMS final output (the one used for reporting) to determine an integrated average CO concentration for each PTM test run. Confirm that the pair of results are on a consistent moisture and O_2 concentration basis. Each integrated CEMS value should then be compared against the corresponding average PTM value. If the CO concentration measured by the CEMS is normalized to a specified diluent concentration, the PTM results shall be normalized to the same value.

2.1.6.4.5 Calculations. Summarize the results on a data sheet. Calculate the mean of the PTM values and calculate the arithmetic differences between the PTM and the CEMS data sets. The mean of the differences, standard deviation, confidence coefficient, and CEMS RA should be calculated using Equations 1 through 4.

2.1.7 Equations

2.1.7.1 Arithmetic Mean (d). Calculate, d of the difference of a data set using Equation 1.

$$\bar{d} = \frac{1}{n}\sum_{i=1}^{n} d_i \quad \text{(Eq. 1)}$$

where:

n = Number of data points

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual difference d_i

When the mean of the differences of pairs of data is calculated, correct the data for moisture, if applicable.

2.1.7.2 Standard Deviation (S_d). Calculate S_d using Equation 2.

$$S_d = \frac{\sqrt{\sum_{i=1}^{n} d_i^2 - \frac{\sum_{i=1}^{n} d_i}{n}^2}}{n-1} \quad \text{(Eq. 2)}$$

2.1.7.3 Confidence Coefficient (CC). Calculate the 2.5 percent error CC (one-tailed) using Equation 3.

$$CC = t_{0.975} \frac{S_d}{\sqrt{n}} \quad \text{(Eq. 3)}$$

where:

$t_{0.975}$ = t-value (see Table 2.1-4).

Table 2.1-4-t-Values

n^a	$t_{0.975}$	n^a	$t_{0.975}$	n^a	$t_{0.975}$
2	12.706	7	2.447	12	2.201
3	4.303	8	2.365	13	2.179
4	3.182	9	2.306	14	2.160
5	2.776	10	2.662	15	2.145
6	2.571	11	2.228	16	2.131

FOOTNOTE: [a] The values in this table are already corrected for n-1 degrees of freedom. Use n equal to the number of individual values.

2.1.7.4 Relative Accuracy. Calculate the RA of a set of data using Equation 4.

$$RA = \frac{|d| + |CC|}{PTM} \times 100 \quad \text{(Eq. 4)}$$

where:

$\bar{d}$ = Absolute value of the mean of the differences (Equation 1).

CC = Absolute value of the confidence coefficient (Equation 3).

$\overline{PTM}$ = Average reference value.

2.1.7.5 Calibration Error. Calculate CE using Equation 5.

$$CE = \left| \frac{\bar{d}}{FS} \right| \times 100 \quad \text{(Eq. 5)}$$

where:

$\bar{d}$ = Mean difference between CEMS response and the known reference concentration.

2.1.8 Reporting

At a minimum, summarize in tabular form the results of the CD, RA, response time, and CE test, as appropriate. Include all data sheets, calculations, CEMS data records, and cylinder gas or reference material certifications.

2.1.9 Alternative Procedure

2.1.9.1 Alternative RA Procedure Rationale. Under some operating conditions, it may not be possible to obtain meaningful results using the RA test procedure. This includes conditions where consistent, very low CO emissions or low CO emissions interrupted periodically by short duration, high level spikes are observed. It may be appropriate in these circumstances to waive the PTM RA test and substitute the following procedure.

2.1.9.2 Alternative RA Procedure. Conduct a complete CEMS status check following the manufacturer's written instructions. The check should include operation of the light source, signal receiver, timing mechanism functions, data acquisition and data reduction functions, data recorders, mechanically operated functions (mirror movements, calibration gas valve operations, etc.), sample filters, sample line heaters, moisture traps, and other related functions of the CEMS, as applicable. All parts of the CEMS must be functioning properly before the RA requirement can be waived. The instruments must also have successfully passed the CE and CD requirements of the performance specifications. Substitution of the alternative procedure requires approval of the Director.

2.1.10 Quality Assurance (QA)

Proper calibration, maintenance, and operation of the CEMS is the responsibility of the owner or operator. The owner or operator must establish a QA program to evaluate and monitor CEMS performance. As a minimum, the QA program must include:

2.1.10.1 A daily calibration check for each monitor. The calibration must be adjusted if the check indicates the instrument's CD exceeds the specification established in Section 2.1.4.5. The gases shall be injected as close to the probe as possible to provide a check of the entire sampling system. If an alternative calibration procedure is desired (e.g., direct injections or gas cells), subject to Director approval, the adequacy of this alternative procedure may be demonstrated during the initial 7-day CD test. Periodic comparisons of the two procedures are suggested.

2.1.10.2 A daily system audit. The audit must include a review of the calibration check data, an inspection of the recording system, an inspection of the control panel warning lights, and an inspection of the sample transport and interface system (e.g., flowmeters, filters), as appropriate.

2.1.10.3 A quarterly calibration error (CE) test. Quarterly RA tests may be substituted for the CE test when approved by the Director on a case-by-case basis.

2.1.10.4 An annual performance specification test.

2.1.11 References

1. Jahnke, James A. and G.J. Aldina, "Handbook: Continuous Air Pollution Source Monitoring Systems," U.S. Environmental Protection Agency Technology Transfer, Cincinnati, Ohio 45268, EPA-625/6-79-005, June 1979.

2. "Gaseous Continuous Emissions Monitoring Systems-Performance Specification Guidelines for SO_2, NO_x, CO_2, O_2, and TRS." U.S. Environmental Protection Agency OAQPS, ESED, Research Triangle Park, North Carolina 27711, EPA-450/3-82-026, October 1982.

3. "Quality Assurance Handbook for Air Pollution Measurement Systems: Volume I. Principles." U.S. Environmental Protection Agency ORD/EMSL, Research Triangle Park, North Carolina, 27711, EPA-600/9-76-006, December 1984.

4. Michie, Raymond, M. Jr., et. al., "Performance Test Results and Comparative Data for Designated Reference Methods for Carbon Monoxide," U.S. Environmental Protection Agency ORD/EMSL, Research Triangle Park, North Carolina, 27711, EPA-600/S4-83-013, September 1982.

5. Ferguson, B.B., R.E. Lester, and W.J. Mitchell, "Field Evaluation of Carbon Monoxide and Hydrogen Sulfide Continuous Emission Monitors at an Oil Refinery," U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711, EPA-600/4-82-054, August 1982.

2.2 Performance Specifications for Continuous Emission Monitoring of Hydrocarbons for Incinerators, Boilers, and Industrial Furnaces Burning Hazardous Waste

2.2.1 Applicability and Principle

2.2.1.1 Applicability. These performance specifications apply to hydrocarbon (HC) continuous emission monitoring systems (CEMSs) installed on incinerators, boilers, and industrial furnaces burning hazardous waste. The specifications include procedures which are intended to be used to evaluate the acceptability of the CEMS at the time of its installation or whenever specified in regulations or permits. The procedures are not designed to evaluate CEMS performance over an extended period of time. The source owner or operator is responsible for the proper calibration, maintenance, and operation of the CEMS at all times.

2.2.1.2 Principle. A gas sample is extracted from the source through a heated sample line and heated filter (except as provided by Section 2.2.10) to a flame ionization detector (FID). Results are reported as volume concentration equivalents of propane. Installation and measurement location specifications, performance and equipment specifications, test and data reduction procedures, and brief quality assurance guidelines are included in the specifications. Calibration drift, calibration error, and response time tests are conducted to determine conformance of the CEMS with the specifications.

2.2.2 Definitions

2.2.2.1 Continuous Emission Monitoring System (CEMS). The total equipment used to acquire data, which includes sample extraction and transport hardware, analyzer, data recording and processing hardware, and software. The system consists of the following major subsystems:

2.2.2.1.1 Sample Interface. That portion of the system that is used for one or more of the following: Sample acquisition, sample transportation, sample conditioning, or protection of the analyzer from the effects of the stack effluent.

2.2.2.1.2 Organic Analyzer. That portion of the system that senses organic concentration and generates an output proportional to the gas concentration.

2.2.2.1.3 Data Recorder. That portion of the system that records a permanent record of the measurement values. The data recorder may include automatic data reduction capabilities.

2.2.2.2 Instrument Measurement Range. The difference between the minimum and maximum concentration that can be measured by a specific instrument. The minimum is often stated or assumed to be zero and the range expressed only as the maximum.

2.2.2.3 Span or Span Value. Full scale instrument measurement range.

2.2.2.4 Calibration Gas. A known concentration of a gas in an appropriate diluent gas.

2.2.2.5 Calibration Drift (CD). The difference in the CEMS output readings from the established reference value after a stated period of operation during which no unscheduled maintenance, repair, or adjustment takes place. A CD test is performed to demonstrate the stability of the CEMS calibration over time.

2.2.2.6 Response Time. The time interval between the start of a step change in the system input (e.g., change of calibration gas) and the time when the data recorder displays 95 percent of the final value.

2.2.2.7 Accuracy. A measurement of agreement between a measured value and an accepted or true value, expressed as the percentage difference between the true and measured values relative to the true value. For these performance specifications, accuracy is checked by conducting a calibration error (CE) test.

2.2.2.8 Calibration Error (CE). The difference between the concentration indicated by the CEMS and the known concentration of the cylinder gas. A CE test procedure is performed to document the accuracy and linearity of the monitoring equipment over the entire measurement range.

2.2.2.9 Performance Specification Test (PST) Period. The period during which CD, CE, and response time tests are conducted.

2.2.2.10 Centroidal Area. A concentric area that is geometrically similar to the stack or duct cross Section and is no greater than 1 percent of the stack or duct cross-Sectional area.

2.2.3 Installation and Measurement Location Specifications

2.2.3.1 CEMS Installation and Measurement Locations. The CEMS shall be installed in a location in which measurements representative of the source's emissions can be obtained. The optimum location of the sample interface for the CEMS is determined by a number of factors, including ease of access for calibration and maintenance, the degree to which sample conditioning will be required, the degree to which it represents total emissions, and the degree to which it represents the combustion situation in the firebox. The location should be as free from in-leakage influences as possible and reasonably free from severe flow disturbances. The sample location should be at least two equivalent duct diameters downstream from the nearest control device, point of pollutant generation, or other point at which a change in the pollutant concentration or emission rate occurs and at least 0.5 diameter upstream from the exhaust or control device. The equivalent duct diameter is calculated as per 40 CFR part 60, appendix A, method 1, Section 2.1. If these criteria are not achievable or if the location is otherwise less than optimum, the possibility of stratification should be investigated as described in Section 2.2.3.2. The measurement point shall be within the centroidal area of the stack or duct cross Section.

2.2.3.2 Stratification Test Procedure. Stratification is defined as a difference in excess of 10 percent between the average concentration in the duct or stack and the concentration at any point more than 1.0 meter from the duct or stack wall. To determine whether effluent stratification exists, a dual probe system should be used to determine the average effluent concentration while measurements at each traverse point are being made. One probe, located at the stack or duct centroid, is used as a stationary reference point to indicate the change in effluent concentration over time. The second probe is used for sampling at the traverse points specified in 40 CFR part 60 appendix A, method 1. The monitoring system samples sequentially at the reference and traverse points throughout the testing period for five minutes at each point.

2.2.4 CEMS Performance and Equipment Specifications

If this method is applied in highly explosive areas, caution and care shall be exercised in choice of equipment and installation.

2.2.4.1 Flame Ionization Detector (FID) Analyzer. A heated FID analyzer capable of meeting or exceeding the requirements of these specifications. Heated systems shall maintain the temperature of the sample gas between 150 °C (300 °F) and 175 °C (350 °F) throughout the system. This requires all system components such as the probe, calibration valve, filter, sample lines, pump, and the FID to be kept heated at all times such that no moisture is condensed out of the system.

[Note: As specified in the regulations, unheated HC CEMs may be considered an acceptable interim alternative monitoring technique. For additional notes, see Section 2.2.10. The essential components of the measurement system are described below]:

2.2.4.1.1 Sample Probe. Stainless steel, or equivalent, to collect a gas sample from the centroidal area of the stack cross-Section.

2.2.4.1.2 Sample Line. Stainless steel or Teflon tubing to transport the sample to the analyzer.

Note: Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.

2.2.4.1.3 Calibration Valve Assembly. A heated three-way valve assembly to direct the zero and calibration gases to the analyzer is recommended. Other methods, such as quick-connect lines, to route calibration gas to the analyzers are applicable.

2.2.4.1.4 Particulate Filter. An in-stack or out-of-stack sintered stainless steel filter is recommended if exhaust gas particulate loading is significant. An out-of-stack filter must be heated.

2.2.4.1.5 Fuel. The fuel specified by the manufacturer (e.g., 40 percent hydrogen/60 percent helium, 40 percent hydrogen/60 percent nitrogen gas mixtures, or pure hydrogen) should be used.

2.2.4.1.6 Zero Gas. High purity air with less than 0.1 parts per million by volume (ppm) HC as methane or carbon equivalent or less than 0.1 percent of the span value, whichever is greater.

2.2.4.1.7 Calibration Gases. Appropriate concentrations of propane gas (in air or nitrogen). Preparation of the calibration gases should be done according to the procedures in EPA Protocol 1.

In addition, the manufacturer of the cylinder gas should provide a recommended shelf life for each calibration gas cylinder over which the concentration does not change by more than ± 2 percent from the certified value.

2.2.4.2 CEMS Span Value. 100 ppm propane.

2.2.4.3 Daily Calibration Gas Values. The owner or operator must choose calibration gas concentrations that include zero and high-level calibration values.

2.2.4.3.1 The zero level may be between 0 and 20 ppm (zero and 20 percent of the span value).

2.2.4.3.2 The high-level concentration shall be between 50 and 90 ppm (50 and 90 percent of the span value).

2.2.4.4 Data Recorder Scale. The strip chart recorder, computer, or digital recorder must be capable of recording all readings within the CEMS's measurement range and shall have a resolution of 0.5 ppm (0.5 percent of span value).

2.2.4.5 Response Time. The response time for the CEMS must not exceed 2 minutes to achieve 95 percent of the final stable value.

2.2.4.6 Calibration Drift. The CEMS must allow the determination of CD at the zero and high-level values. The CEMS calibration response must not differ by more than ± 3 ppm (± 3 percent of the span value) after each 24-hour period of the 7-day test at both zero and high levels.

2.2.4.7 Calibration Error. The mean difference between the CEMS and reference values at all three test points listed below shall be no greater than 5 ppm (± 5 percent of the span value).

2.2.4.7.1 Zero Level. Zero to 20 ppm (0 to 20 percent of span value).
2.2.4.7.2 Mid-Level. 30 to 40 ppm (30 to 40 percent of span value).

2.2.4.7.3 High-Level. 70 to 80 ppm (70 to 80 percent of span value).

2.2.4.8 Measurement and Recording Frequency. The sample to be analyzed shall pass through the measurement Section of the analyzer without interruption. The detector shall measure the sample concentration at least once every 15 seconds. An average emission rate shall be computed and recorded at least once every 60 seconds.

2.2.4.9 Hourly Rolling Average Calculation. The CEMS shall calculate every minute an hourly rolling average, which is the arithmetic mean of the 60 most recent 1-minute average values.

2.2.4.10 Retest. If the CEMS produces results within the specified criteria, the test is successful. If the CEMS does not meet one or more of the criteria, necessary corrections must be made and the performance tests repeated.

2.2.5 Performance Specification Test (PST) Periods

2.2.5.1 Pretest Preparation Period. Install the CEMS, prepare the PTM test site according to the specifications in Section 2.2.3, and prepare the CEMS for operation and calibration according to the manufacturer's written instructions. A pretest conditioning period similar to that of the 7-day CD test is recommended to verify the operational status of the CEMS.

2.2.5.2 Calibration Drift Test Period. While the facility is operating under normal conditions, determine the magnitude of the CD at 24-hour intervals for seven consecutive days according to the procedure given in Section 2.2.6.1. All CD determinations must be made following a 24-hour period during which no unscheduled maintenance, repair, or adjustment takes place. If the combustion unit is taken out of service during the test period, record the onset and duration of the downtime and continue the CD test when the unit resumes operation.

2.2.5.3 Calibration Error Test and Response Time Test Periods. Conduct the CE and response time tests during the CD test period.

2.2.6 Performance Specification Test Procedures

2.2.6.1 Calibration Drift Test.

2.2.6.1.1 Sampling Strategy. Conduct the CD test at 24-hour intervals for seven consecutive days using calibration gases at the two daily concentration levels specified in Section 2.2.4.3. Introduce the two calibration gases into the sampling system as close to the sampling probe outlet as practical. The gas shall pass through all CEM components used during normal sampling. If periodic automatic or manual adjustments are made to the CEMS zero and calibration settings, conduct the CD test immediately before these adjustments, or conduct it in such a way that the CD can be determined. Record the CEMS response and subtract this value from the reference (calibration gas) value. To meet the specification, none of the differences shall exceed 3 ppm.

2.2.6.1.2 Calculations. Summarize the results on a data sheet. An example is shown in Figure 2.2-1. Calculate the differences between the CEMS responses and the reference values.

2.2.6.2 Response Time. The entire system including sample extraction and transport, sample conditioning, gas analyses, and the data recording is checked with this procedure.

2.2.6.2.1 Introduce the calibration gases at the probe as near to the sample location as possible. Introduce the zero gas into the system. When the system output has stabilized (no change greater than 1 percent of full scale for 30 sec), switch to monitor stack effluent and wait for a stable value. Record the time (upscale response time) required to reach 95 percent of the final stable value.

2.2.6.2.2 Next, introduce a high-level calibration gas and repeat the above procedure. Repeat the entire procedure three times and determine the mean upscale and downscale response times. The longer of the two means is the system response time.

2.2.6.3 Calibration Error Test Procedure.

2.2.6.3.1 Sampling Strategy. Challenge the CEMS with zero gas and EPA Protocol 1 cylinder gases at measurement points within the ranges specified in Section 2.2.4.7.

2.2.6.3.1.1 The daily calibration gases, if Protocol 1, may be used for this test.

SOURCE:	**DATE:**
MONITOR:	**LOCATION:**
SERIAL NUMBER:	**SPAN:**

	DAY	**DATE**	**TIME**	**CALIBRATION VALUE**	**MONITOR RESPONSE**	**DIFFERENCE**	**PERCENT OF SPAN***
ZERO/ LOW LEVEL	**1**						
	2						
	3						
	4						
	5						
	6						
	7						
HIGH LEVEL	**1**						
	2						
	3						
	4						
	5						
	6						
	7						

*Acceptance Criteria: $\leq$ 3% of span each day for seven days.

2.2.6.3.1.2 Operate the CEMS as nearly as possible in its normal sampling mode. The calibration gas should be injected into the sampling system as close to the sampling probe outlet as practical and shall pass through all filters, scrubbers, conditioners, and other monitor components used during normal sampling. Challenge the CEMS three non-consecutive times at each measurement point and record the responses. The duration of each gas injection should be for a sufficient period of time to ensure that the CEMS surfaces are conditioned.

2.2.6.3.2 Calculations. Summarize the results on a data sheet. An example data sheet is shown in Figure 2.2-2. Average the differences between the instrument response and the certified cylinder gas value for each gas. Calculate three CE results according to Equation 1. No confidence coefficient is used in CE calculations.

2.2.7 Equations

2.2.7.1 Calibration Error. Calculate CE using Equation 1.

$$CE = \left|\frac{\bar{d}}{FS}\right| \times 100$$

where: $\bar{d}$ = *Mean difference between CEMS response and the known reference concentration.*

2.2.8 Reporting

At a minimum, summarize in tabular form the results of the CD, response time, and CE test, as appropriate. Include all data sheets, calculations, CEMS data records, and cylinder gas or reference material certifications.

SOURCE:	**DATE:**
MONITOR:	**LOCATION:**
SERIAL NUMBER:	**SPAN:**

RUN NUMBER	**CALIBRATION VALUE**	**MONITOR RESPONSE**	**DIFFERENCE**		
			Zero/Low	**Mid**	**High**
1 - Zero				▨	▨
2 - Mid			▨		▨
3 - High			▨	▨	
4 - Mid			▨		▨
5 - Zero				▨	▨
6 - High			▨	▨	
7 - Zero				▨	▨
8 - Mid			▨		▨
9 - High			▨	▨	
		MEAN DIFFERENCE =			
		CALIBRATION ERROR =	%	%	%

Figure 2.2-2 Calibration Error Determination

2.2.9 Quality Assurance (QA)

Proper calibration, maintenance, and operation of the CEMS is the responsibility of the owner or operator. The owner or operator must establish a QA program to evaluate and monitor CEMS performance. As a minimum, the QA program must include:

2.2.9.1 A daily calibration check for each monitor. The calibration must be adjusted if the check indicates the instrument's CD exceeds 3 ppm. The gases shall be injected as close to the probe as possible to provide a check of the entire sampling system. If an alternative calibration procedure is desired (e.g., direct injections or gas cells), subject to Director approval, the adequacy of this alternative procedure may be demonstrated during the initial 7-day CD test. Periodic comparisons of the two procedures are suggested.

2.2.9.2 A daily system audit. The audit must include a review of the calibration check data, an inspection of the recording system, an inspection of the control panel warning lights, and an inspection of the sample transport and interface system (e.g., flowmeters, filters), as appropriate.

2.2.9.3 A quarterly CE test. Quarterly RA tests may be substituted for the CE test when approved by the Director on a case-by-case basis.

2.2.9.4 An annual performance specification test.

2.2.10 Alternative Measurement Technique

The regulations allow gas conditioning systems to be used In conjunction with unheated HC CEMs during an interim period. This gas conditioning may include cooling to not less than 40 °F and the use of condensate traps to reduce the moisture content of sample gas entering the FID to less than 2 percent. The gas conditioning system, however, must not allow the sample gas to bubble through the condensate as this would remove water soluble organic compounds. All components upstream of the conditioning system should be heated as described in Section 2.2.4 to minimize operating and maintenance problems.

2.2.11 References

1. Measurement of Volatile Organic Compounds-Guideline Series. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, 27711, EPA-450/2-78-041, June 1978.

2. Traceability Protocol for Establishing True Concentrations of Gases Used for Calibration and Audits of Continuous Source Emission Monitors (Protocol No. 1). U.S. Environmental Protection Agency ORD/EMSL, Research Triangle Park, North Carolina, 27711, June 1978.

3. Gasoline Vapor Emission Laboratory Evaluation-Part 2. U.S. Environmental Protection Agency, OAQPS, Research Triangle Park, North Carolina, 27711, EMB Report No. 76-GAS-6, August 1975.

SECTION 3.0 SAMPLING AND ANALYTICAL METHODS

Note: The sampling and analytical methods to the BIF manual are published in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in Chapter 1, Section 1(g) of these rules and regulations.

SECTION 4.0 PROCEDURE FOR ESTIMATING THE TOXICITY EQUIVALENCY OF CHLORINATED DIBENZO-P-DIOXIN AND DIBENZOFURAN CONGENERS

PCDDs and PCDFs must be determined using the method given in Section 3.4 of this document. In this method, individual congeners or homologues[1] are measured and then summed to yield a total PCDD/PCDF value. No toxicity factors are specified in the method to compute risks from such emissions.

FOOTNOTE: [1]The term "congener" refers to any one particular member of the same chemical family; e.g., there are 75 congeners of chlorinated dibenzo-p-dioxins. The term "homologue" refers to a group of structurally related chemicals that have the same degree of chlorination. For example, there are eight homologues of CDs, monochlorinated through octachlorinated. Dibenzo-p-dioxins and dibenzofurans that are chlorinated at the 2,3,7, and 8 positions are denoted as "2378" congeners, except when 2,3,7,8-TCDD is uniquely referred to: e.g., 1,2,3,7,8-PeCDF and 2,3,4,7,8- PeCDF are both referred to as "2378-PeCDFs."

For the purpose of estimating risks posed by emissions from boilers and industrial furnaces, however, specific congeners and homologues must be measured using the specified method and then multiplied by the assigned toxicity equivalence factors (TEFs), using procedures described in "Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs) and 1989 Update," EPA/625/3-89/016, March 1989. The resulting 2,3,7,8-TCDD equivalents value is used in the subsequent risk calculations and modeling efforts as discussed in the BIF final rule.

The procedure for calculating the 2,3,7,8-TCDD equivalent is as follows:

1. Using method 23, determine the concentrations of 2,7,3,8-congeners of various PCDDs and PCDFs in the sample.

2. Multiply the congener concentrations in the sample by the TEF listed in Table 4.0-1 to express the congener concentrations in terms of 2,3,7,8-TCDD equivalent. Note that congeners not chlorinated at 2,3,7, and 8 positions have a zero toxicity factor in this table.

3. Add the products obtained in step 2, to obtain the total 2,3,7,8-TCDD equivalent in the sample.

Sample calculations are provided in EPA document No. EPA/625/3-89/016, March 1989, which can be obtained from the EPA, ORD Publications Office, Cincinnati, Ohio (Phone no. 513-569-7562).

Table 4.0-1.-2,3,7,8-TCDD Toxicity Equivalence Factors (TEFs)[1]

Compound	I-TEFs, 89
Mono-, Di-, and TriCDDs	0
2,3,7,8-TCDD	1
Other TCDDs	0
2,3,7,8-PeCDD	0.5
Other PeCDDs	0
2,3,7,8-HxCDD	0.1
Other HxCDDs	0
2,3,7,8-HpCDD	0.01

Other HpCDDs	0
OCDD	0.001
Mono-, Di-, and TriCDFs	0
2,3,7,8-TCDF	0.1
Other TCDFs	0
1,2,3,7,8-PeCDF	0.05
2,3,4,7,8-PeCDF	0.5
Other PeCDFs	0
2378-HxCDFs	0.1
Other HxCDFs	0
2378-HpCDFs	0.01
Other HpCDFs	0
OCDF	0.001

Reference: Adapted from NATO/CCMS, 1988a.

FOOTNOTE: [1] Interim Procedures for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs and CDFs) 1989 Update EPA/625/3-89/016, March 1989.

SECTION 5.0 HAZARDOUS WASTE COMBUSTION AIR QUALITY SCREENING PROCEDURE

The HWCAQSP is a combined calculation/reference table approach for conservatively estimating short-term and annual average facility impacts for stack emissions. The procedure is based on extensive short-term modeling of 11 generic source types and on a set of adjustment factors for estimating annual average concentrations from short-term concentrations. Facility impacts may be determined based on the selected worst-case stack or on multiple stacks, in which the impacts from each stack are estimated separately and then added to produce the total facility impact.

This procedure is most useful for facilities with multiple stacks, large source-to-property boundary distances, and complex terrain between 1 and 5 km from the facility. To ensure a sufficient degree of conservatism, the HWCAQSP may not be used if any of the five screening procedure limitations listed below are true:

- The facility is located in a narrow valley less than 1 km wide;

- The facility has a stack taller than 20 m and is located such that the terrain rises to the stack height within 1 km of the facility;

- The facility has a stack taller than 20 m and is located within 5 km of the shoreline of a large body of water;

- The facility property line is within 200 m of the stack and the physical stack height is less than 10 m; or

- On-site receptors are of concern, and stack height is less than 10 m.

If any of these criteria are met or the Director determines that this procedure is not appropriate, then detailed site-specific modeling or modeling using the "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources," EPA -450/4-88-010, Office of Air Quality Planning and Standards, August 1988, is required. Detailed site-specific dispersion modeling must conform to the EPA "Guidance on Air Quality Models (Revised)", EPA 450/2-78-027R, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, July 1986. This document provides guidance on both the proper selection and regulatory application of air quality models.

Introduction

The Hazardous Waste Combustion Air Quality Screening Procedure (HWCAQSP) (also referred to hereafter as "the screening procedure" or "the procedure") provides a quick, easy method for estimating maximum (hourly) and annual average ambient air impacts associated with the combustion of hazardous waste. The methodology is conservative in nature and estimates dispersion coefficients[1] based on facility-specific information.

FOOTNOTE: [1]The term dispersion coefficient refers to the change in ambient air concentration ($\mu g/m^3$) resulting from a source with an emission rate of 1 g/sec.

The screening procedure can be used to determine emissions limits at sites where the nearest meteorological (STAR) station is not representative of the meteorology at the site. If the screen shows that emissions from the site are adequately protective, then the need to collect site-specific meteorological data can be eliminated.

The screening procedure is generally most helpful for facilities meeting one or more of the following conditions:

- Multiple stacks with substantially different release specifications (e.g., stack heights differ by >50 percent, exit temperatures differ by >50 °K, or the exit flow rates differ by more than a factor of 2),

- Terrain located between 1 km and 5 km from the site increases in elevation by more than the physical height of the shortest stack (i.e., the facility is located in complex terrain), or

- Significant distance between the facility's stacks and the site boundary [guidance on determining whether a distance is "significant" is provided in Step 6(B) of the procedure].

Steps 1 through 9 of the screening procedure present a simplified method for determining emissions based on the use of the "worst-case" stack. If the simplified method shows that desired feed rates result in emissions that exceed allowable limits for one or more pollutants, a refined analysis to examine the emissions from each stack can be conducted. This multiple-stack method is presented in Step 10.

The steps involved in screening methodology are as follows:

Step 1. Define Source Characteristics
Step 2. Determine the Applicability of the Screening Procedure
Step 3. Select the Worst-Case Stack
Step 4. Verify Good Engineering Practice (GEP) Criteria
Step 5. Determine the Effective Stack Height and Terrain-Adjusted Effective Stack Height
Step 6. Classify the Site as Urban or Rural
Step 7. Determine Maximum Dispersion Coefficients
Step 8. Estimate Maximum Ambient Air Concentrations
Step 9. Determine Compliance With Regulatory Limits
Step 10.Multiple Stack Method

Step 1: Define Source Characteristics

Provide the following source data:[2]

FOOTNOTE: [2]Worksheet space is provided for three stacks. If the facility has additional stacks, copy the form and revise stack identification numbers for 4, 5, etc.

Stack Data:	Stack No. 1	Stack No. 2	Stack No. 3
Physical stack height (m)	______________	______________	___________
Exhaust temperature (°K)	______________	______________	___________
Flow rate (m^3/sec)	_____________	_____________	___________

Nearby Building Dimensions

Consider all buildings within five building heights or five maximum projected widths of the stack(s). For the building with the greatest height, fill in the spaces below.

Building Height (m)---
Maximum projected building width (m)----------------------------

Nearby Terrain Data

Determine maximum terrain rise for the following three distance ranges from the facility (not required if the highest stack is less than 10 m in height):

______ (m)	______ (m)	______ (m)
0-0.5 km	0-2.5 km	0-5 km

Distance from facility to nearest shoreline (km)----------------
Valley width (km)---

Step 2: Determine the Applicability of the Screening Procedure

Fill in the following data:

	Yes
Is the facility in a valley < km in width?................................	________
Is the terrain rise within 1 km of the facility greater than the physical stack height of the tallest stack? (Only applies to stacks #20 meters in height)...	________
Is the distance to the nearest shoreline <5 km? (Only applies to facilities with stacks #20 meters in height)...	________
For the building listed in Step 1, is the closest property boundary <5 times the building height or <5 times the maximum projected building width? (Only applies to facilities with a stack height <2.5 times the building height)..	________

If the answer is "no" to all the preceding questions, then the HWCAQSP is acceptable. If the answer to any question is "yes", the procedure is not acceptable.

Step 3: Select the Worst-Case Stack

If the facility has several stacks, a worst-case stack must be chosen to conservatively represent release conditions at the facility. Follow the steps below to identify the worst-case stack.

Apply the following equation to each stack:

K = HVT

where:

K = an arbitrary parameter accounting for the relative influence of the stack height and plume rise.

H = Physical stack height (m)

V = Flow rate (m^3/sec)

T = Exhaust temperature (°K)

Complete the following table to compute the "K" value for each stack:

Stack No.	Stack height (m)	X	Flow rate (m^3/sec)	X	Exit temp (°K)	=	K
1	________	X	_______	X	________	=	________
2	________	X	_______	X	________	=	________
3	________	X	_______	X	________	=	________

Select the stack with the lowest "K" value. This is the worst-case stack that will be used for Steps 4 through 9.

Worst-Case Stack is identified as Stack No._____

Step 4: Verify Good Engineering Practice (GEP) Criteria

Confirm that the selected worst-case stack meets Good Engineering Practice (GEP) criteria. The stack height to be used in the subsequent steps of this procedure must not be greater than the maximum GEP. Maximum and minimum GEP stack heights are defined as follows:

CEP (minimum)= H + (1.5 X L)

GEP (maximum) = greater of 65m or H + (1.5 x L)

where:

H = height of the building selected in Step 1 measured from ground level elevation at the base of the stack

L = the lesser dimension of the height or projected width of the building selected in Step 1

Record the following data for the worst-case stack:

Stack height (m) = __________

H(m) __________

L(m)__________

Then compute the following:

GEP (mimimum)(m) = _____________

GEP (maximum)(m) = _____________

- If the physical height of the worst-case stack exceeds the maximum GEP, then use the maximum GEP stack height for the subsequent steps of this analysis;

- If the physical height of the worst-case stack is less than the minimum GEP, then use generic source number 11 as the selected source for further analysis and proceed directly to Step 6;

- If the physical height of the worst-case stack is between the minimum and maximum GEP, then use the actual physical stack height for the subsequent steps of this analysis.

Step 5: Determine the Effective Stack Height and the Terrain-Adjusted Effective Stack Height (TAESH)

The effective stack height is an important factor in dispersion modeling. The effective stack height is the physical height of the stack plus plume rise. As specified in Step 4, the stack height used to estimate the effective stack height must not exceed GEP requirements. Plume rise is a function of the stack exit gas temperature and flow rate.

In this analysis, the effective stack height is used to select the generic source that represents the dispersion characteristics of the facility. For facilities located in flat terrain and for all facilities with worst-case stacks less than or equal to 10 meters in height, generic source numbers are selected strictly on the basis of effective stack height. In all other cases, the effective stack height is further adjusted to take into account the terrain rise near the facility. This "terrain-adjusted effective stack height" (TAESH) is then used to select the generic source number that represents the dispersion characteristics of the facility. Follow the steps below to identify the effective stack height, the TAESH (where applicable), and the corresponding generic source number.

(A) Go to Table 5.0-1 and find the plume rise value corresponding to the stack temperature and exit flow rate for the worst-case stack determined in Step 3.

Plume rise =__________(m)

(B) Add the plume rise to the GEP stack height of the worst-case stack determined in Steps 3 and 4.

GEP stack height (m)	+	Plume rise (m)	=	Effective stack height (m)
________________	+	________________	=	________________

(C) Go to the first column of Table 5.0-2 and identify the range of effective stack heights that includes the effective stack height estimated in Step 5(B). Record the generic source number that corresponds to this range.

Generic source number =__________

(D) If the source is located in flat terrain[3], or if the generic source number identified in Step 5(C) above is 1 or 11 (regardless of terrain classification), use the generic source number determined in Step 5(C) and proceed directly to Step 6. Otherwise, continue to Step 5(E).

FOOTNOTE: [3]The terrain is considered flat and terrain adjustment factors are not used if the maximum terrain rise within 5 km of the facility (see Step 1) is less than 10 percent of the physical stack height of the worst-case stack.

(E) For those situations where the conditions in Step 5(D) do not apply, the effective stack height must be adjusted for terrain. The TAESH for each distance range is computed by subtracting the terrain rise within the distance range from the effective stack height.[4]

FOOTNOTE: [4]Refer to Step 1 for terrain adjustment data. Note that the distance from the source to the outer radii of each range is used. For example, for the range >0.5-2.5 km, the maximum terrain rise in the range 0.0-2.5 km is used.

Table 5.0-1.-Estimated Plume Rise (in Meters) Based on Stack Exit Flow Rate and Gas Temperature

	Exhaust Temperature (°K)									
Flow rate (m^3/s)	<325	325 - 349	350 - 399	400 - 449	450-499	500 - 599	600-699	700 - 799	800 - 999	1000 - 1499	>1499
<0.5	0	0	0	0	0	0	0	0	0	0	0
0.5-0.9	0	0	0	0	0	0	0	0	1	1	1
1.0-1.9	0	0	0	0	1	1	2	3	3	3	4
2.0-2.9	0	0	1	3	4	4	6	6	7	8	9
3.0-3.9	0	1	2	5	6	7	9	10	11	12	13
4.0-4.9	1	2	4	6	8	10	12	13	14	15	17
5.0-7.4	2	3	5	8	10	12	14	16	17	19	21

Table 5.0-1.-Estimated Plume Rise (in Meters) Based on Stack Exit Flow Rate and Gas Temperature

	Exhaust Temperature (°K)										
7.5-9.9	3	5	8	12	15	17	20	22	22	23	24
10.0-12.4	4	6	10	15	19	21	23	24	25	26	27
12.5-14.9	4	7	12	18	22	23	25	26	27	28	29
15.0-19.9	5	8	13	20	23	24	26	27	28	29	31
20.0-24.9	6	10	17	23	25	27	29	30	31	32	34
25.0-29.9	7	12	20	25	27	29	31	32	33	35	36
30.0-34.9	8	14	22	26	29	31	33	35	36	37	39
35.0-39.9	9	16	23	28	30	32	35	36	37	39	41
40.0-49.9	10	17	24	29	32	34	36	38	39	41	42
50.0-59.9	12	21	26	31	34	36	39	41	42	44	46
60.0-69.9	14	22	27	33	36	39	42	43	45	47	49
70.0-79.9	16	23	29	35	38	41	44	46	47	49	51
80.0-89.9	17	25	30	36	40	42	46	48	49	51	54
90.0-99.9	19	26	31	38	42	44	48	50	51	53	56
100.0-119.9	21	26	32	39	43	46	49	52	53	55	58
120.0-139.9	22	28	35	42	46	49	52	55	56	59	61
140.0-159.9	23	30	36	44	48	51	55	58	59	62	65
160.0-179.9	25	31	38	46	50	54	58	60	62	65	67
180.0-199.9	26	32	40	48	52	56	60	63	65	67	70
>199.9	26	33	41	49	54	58	62	65	67	69	73

Table 5.0-2-Selection of Generic Source Number

Effective stack height (m)	Generic source No.
<10.0	1
10.0-14.9	2
15.0-19.9	3
20.0-24.9	4
25.0-30.9	5
31.0-41.9	6
42.0-52.9	7
53.0-64.9	8
65.0-122.9	9
113.0+	10
Downwash	11

Table 5.0-3.-Classification of Land Use Types

Type[1]	Description	Urban or rural designation[2]
I1	Heavy Industrial	Urban
I2	Light/Moderate Industrial	Urban
Cl	Commercial	Urban
R1	Common Residential (Normal Easements)	Rural
R2	Compact Residential (Single Family)	Urban
R3	Compact Residential (Multi-Family)	Rural
R4	Estate Residential (Multi-Acre Plots)	Rural
A1	Metropolitan Natural	Rural
A2	Agricultural	Rural
A3	Undeveloped (Grasses/Weeds)	Rural
A4	Undeveloped (Heavily Wooded)	Rural
A5	Water Surfaces	Rural

* FOOTNOTE: [1] EPA, Guideline on Air Quality Models (Revised), EPA-450/2-78-027R, Office of Air Quality Planning and Standards,

Research Triangle Park, North Carolina, July, 1986.
FOOTNOTE: [2] Auer, August H. Jr., "Correlation of Land Use and Cover with meteorological Anomalies," Journal of Applied Meteorology, pp. 636-643, 1978.

Distance range (km)	Effective stack-height (m) [see step 5(B)]	-	Maximum terrain-rise (m) (see step 1)	=	TAESH(m)
0.0-0.5	____________	-	____________	=	____________
>0.5-2.5	____________	-	____________	=	____________
>2.5-5.0	__________	-	__________	=	__________

If the terrain rise for any of the distance ranges is greater than the effective stack height, set the TAESH equal to zero and use generic source number 1 for that distance range.

Record the generic source numbers from Table 5.0-2 based on each of the TAESH values.

Distance range (km)	Generic source No. (after terrain adjustment)
0.0-0.5	__________________________
>0.5-2.5	__________________________
>2.5-5.0	__________________________

Step 6: Classify the Site as Urban or Rural

(A) Classify the land use near the facility as either urban or rural by determining the percentage of urban land use types (as defined in Table 3; for further guidance see the footnoted references) that fall within 3 km of the facility.[5]

FOOTNOTE: [5] The delineation of urban and rural areas, can be difficult for the residential-type areas listed in Table 5.0-3. The degree of resolution in Table 5.0-3 for residential areas often cannot be identified without conducting site area inspections. This process can require extensive analysis, which, for many applications, can be greatly streamlined without sacrificing confidence in selecting the appropriate urban or rural classification. The fundamental simplifying assumption is based on the premise that many applications will have clear-cut urban/rural designations, i.e., most will be in rural settings that can be definitively characterized through a review of aerial photographs, zoning maps, or U.S. Geological Survey topographical maps.

Method Used to Estimate Percent Urban Land Use:	Visual	Planimeter
	_________	_________
Estimated Percentages.	Urban	Rural
	_________	_________

If the urban land use percentage is less than or equal to 30 percent based on a visual estimate, or 50 percent based on a planimeter, the local land use is considered rural. Otherwise, the local land use is considered urban.

Classification. (check applicable space).	Urban _________	Rural _________

(B) Based on the TAESH and the urban/rural classification of surrounding land use, use the following table to determine the threshold distance between any stack and the nearest facility boundary.

Terrain adjusted effective stack height range (m)	Distance (m)	
	Urban	Rural
1-9.9	200	200
10-14.9	200	250
15-19.9	200	250
20-24.9	200	350
25-30.9	200	450
31-41.9	200	550
42-52.9	250	800
53-64.9	300	1000
65-112.9	400	1200
113+	700	2500

Record the following information:

Threshold distance from the table (m):_____

Minimum distance from any stack to property boundary (m):_____

If the minimum distance between any stack and the nearest facility boundary is greater than the threshold distance, the surrounding buffer distance is considered significant and the facility is likely to benefit from use of the HWCAQSP relative to the Tier I and II limits (see discussion of benefits from using HWCAQSP in Introduction Section).

Step 7: Determine Maximum Dispersion Coefficients

(A) Determine maximum average hourly dispersion coefficients. Based on the results of Step 6(A), select either Table 5.0-4 (urban) or Table 5.0-5 (rural) to determine the maximum average hourly dispersion coefficient.[6] For flat terrain [defined in Step 5(D)] and for all sites with generic source numbers 1 or 11, use Step 7(A) (1). For rolling or complex terrain (excluding generic sources numbers 1 and 11), use Step 7(A) (2).

FOOTNOTE: [6] For the distance range 6 to 20 kilometers, generic source number 1 is used to conservatively represent the maximum dispersion coefficient.

(1) Search down the appropriate generic source number column [based on Step 5(C)], beginning at the minimum fenceline distance listed in Step 6(B).[7] Record the maximum average hourly dispersion coefficient encountered.

FOOTNOTE: [7] Exclude all distances that are closer to the facility than the property boundary. For example, if the actual distance to the nearest property boundary is 265 meters, begin at the 300 meter distance in Tables 5.0-4 and 5.0-5.

Maximum Average Hourly Dispersion

Coefficient = __________ ($\mu g/m^3/g/sec$)

(2) For each of the three distance-based generic source numbers listed in Step 5(E), search down the appropriate generic source number columns, beginning at the minimum fenceline distance listed in Step 6(B). Note that different columns may be used for each of the three distance ranges if there is a need for terrain adjustment. Record the maximum dispersion coefficient for each generic source number.

Distance range (km)	Generic source No. [from Step 5(e)]	Maximum dispersion coefficient ($\mu g/m^3/m/sec$)
0.0-0.5		
>0.5-2.5		
>2.5-5.0		
>5.0-20.0		

*Table 5.0-4.-ISCST Predicted Maximum Concentrations ($\mu g/m^3$)[a] for Hazardous Waste Combustors Using Urban Conditions

Distance (KM)	Generic Source #1 (<10M)	Generic Source #2 (10M)	Generic Source #3 (15M)	Generic Source #4 (20M)	Generic Source #5 (25M)	Generic Source #6 (31M)	Generic Source #7 (42M)	Generic Source #8 (53M)	Generic Source #9 (65M)	Generic Source #10 (113M)	Generic Source #11 (Downwash)
0.20	680.1	517.5	368.7	268.7	168.5	129.8	63.4	30.1	18.4	1.6	662.3
0.25	521.9	418.2	303.7	232.6	163.0	124.2	67.6	38.5	19.8	3.2	500.0
0.30	407.7	351.7	256.2	199.0	147.0	118.3	63.5	41.5	25.0	4.2	389.3
0.35	326.2	304.2	221.6	172.7	130.2	107.9	60.0	40.5	27.3	5.4	311.9
0.40	268.5	268.5	195.6	152.5	115.7	97.1	59.6	37.8	27.4	5.8	268.5
0.45	240.8	240.7	175.4	136.7	103.9	87.6	56.6	37.2	26.3	5.8	240.8
0.50	218.5	218.5	159.2	124.1	94.4	79.7	52.9	36.7	24.7	5.8	218.5
0.55	200.3	200.3	145.9	113.8	86.5	73.1	49.2	35.4	24.5	6.6	200.3
0.60	185.1	185.1	134.9	105.1	80.0	67.6	45.8	33.8	24.3	7.1	185.1
0.65	172.2	172.2	125.5	97.8	74.4	62.9	42.7	32.0	23.7	7.4	172.2
0.70	161.2	161.2	117.4	91.6	69.6	58.9	40.1	30.2	22.9	7.5	161.2
0.75	151.6	151.6	110.5	86.1	65.5	55.4	37.7	28.6	22.0	7.5	151.6
0.80	143.2	143.2	104.4	81.4	61.9	52.3	35.6	27.1	21.1	7.4	143.2
0.85	135.8	135.8	99.0	77.2	58.7	49.6	33.8	25.7	20.2	7.2	135.8
0.90	129.2	129.2	94.2	73.4	55.8	47.2	32.1	24.5	19.3	7.0	129.2
0.95	123.3	123.3	89.9	70.1	53.3	45.0	30.7	23.4	18.5	6.8	123.3
1.00	118.0	118.0	86.0	67.0	51.0	43.1	29.4	22.4	17.7	6.5	118.0
1.10	108.8	108.0	79.3	61.8	47.0	39.7	27.1	20.6	16.4	6.5	108.8
1.20	101.1	101.1	73.7	57.4	43.7	36.9	25.2	19.2	15.2	6.4	101.1
1.30	94.6	94.6	68.9	53.7	40.9	34.5	23.5	18.0	14.2	6.3	94.6
1.40	89.0	89.0	64.8	50.6	38.5	32.5	22.1	16.9	13.4	6.1	89.0
1.50	84.1	84.1	61.3	47.8	36.3	30.7	20.9	16.0	12.7	5.9	84.1
1.60	79.8	79.8	58.2	45.4	34.5	29.2	19.9	15.2	12.0	5.6	79.8

*Table 5.0-4.-ISCST Predicted Maximum Concentrations ($\mu g/m^3$)[a] for Hazardous Waste Combustors Using Urban Conditions

1.70	76.0	76.0	55.4	43.2	32.9	27.8	18.9	14.4	11.4	5.4	76.0
1.80	72.7	72.7	53.0	41.3	31.4	26.5	18.1	13.8	10.9	5.2	72.7
1.90	69.6	69.6	50.7	39.6	30.1	25.4	17.3	13.2	10.5	5.0	69.6
2.00	66.9	66.9	48.8	38.0	28.9	24.4	16.7	12.7	10.1	4.8	66.9
2.25	61.1	61.1	44.5	34.7	26.4	22.3	15.2	11.6	9.2	4.4	61.1
2.50	56.4	56.4	41.1	32.1	24.4	20.6	14.0	10.7	8.5	4.1	56.4
2.75	52.6	52.6	38.3	29.9	22.7	19.2	10.0	10.0	7.9	3.8	52.6
3.00	49.3	49.3	35.9	28.0	21.3	18.0	9.4	9.4	7.4	3.6	49.3
4.00	40.2	40.2	29.3	22.8	17.4	14.7	7.6	7.6	6.1	2.9	40.2
5.00	34.5	34.5	25.2	19.6	14.9	12.6	6.6	6.6	5.2	2.5	34.5
6.00	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7	30.7
7.00	27.8	27.8	27.8	37.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8
8.00	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
9.00	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8
10.00	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3	22.3
Distance (KM)	Generic Source #1 (<10M)	Generic Source #2 (10M)	Generic Source #3 (15M)	Generic Source #4 (20M)	Generic Source #5 (25M)	Generic Source #6 (31M)	Generic Source #7 (42M)	Generic Source #8 (53M)	Generic Source #9 (65M)	Generic Source #10 (113M)	Generic Source #11 (Downwash)
15.00	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6
20.00	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.01	15.0

FOOTNOTE: [a]Based on a 1 Gram/Second Emission Rate

*Table 5.0-5.-ISCST Predicted Maximum Concentrations ($\mu g/m^3$)[a] for Hazardous Waste Combustors Using Urban Conditions

Distance (KM)	Generic Source #1 (<10M)	Generic Source #2 (10M)	Generic Source #3 (15M)	Generic Source #4 (20M)	Generic Source #5 (25M)	Generic Source #6 (31M)	Generic Source #7 (42M)	Generic Source #8 (53M)	Generic Source #9 (65M)	Generic Source #10 (113M)	Generic Source #11 (Downwash)
0.20	1771.1	670.3	308.6	176.8	102.8	76.5	28.0	10.1	3.5	0.0	1350.8
0.25	1310.6	678.4	316.9	183.6	104.6	71.8	38.0	17.6	7.9	0.2	1227.3
0.30	1002.3	629.2	303.4	199.1	100.4	75.0	39.7	24.0	12.6	0.8	1119.3
0.35	798.4	569.6	282.3	200.7	117.0	71.1	36.3	25.9	16.8	1.9	1023.8
0.40	656.9	516.5	278.7	194.4	125.2	82.7	25.3	24.6	18.1	3.1	938.9

*Table 5.0-5.-ISCST Predicted Maximum Concentrations ($\mu g/m^3$)[a] for Hazardous Waste Combustors Using Urban Conditions

0.45	621.5	471.1	277.6	184.3	127.5	89.7	35.6	21.7	17.6	4.3	851.8
0.50	633.5	432.4	272.0	172.7	125.7	92.9	34.4	21.6	15.9	5.5	787.8
0.55	630.1	399.2	263.8	168.0	121.6	93.3	38.6	22.1	13.6	6.5	730.6
0.60	616.6	370.4	254.0	169.1	116.2	91.8	42.6	21.7	14.3	6.7	676.4
0.65	596.7	345.4	243.6	168.1	110.3	89.2	45.3	20.9	14.7	6.4	633.4
0.70	573.2	323.4	232.9	165.6	104.5	85.8	47.0	23.3	14.6	5.9	592.0
0.75	546.9	304.0	222.3	162.0	98.8	82.2	47.7	25.5	14.3	5.5	554.6
0.80	520.9	286.8	212.1	157.7	98.8	78.5	47.8	27.1	13.8	5.1	522.1
0.85	495.7	271.5	202.4	153.0	99.0	74.9	47.4	28.3	15.0	4.7	491.8
0.90	471.5	257.8	193.3	148.1	98.6	71.4	46.6	29.1	16.3	4.5	464.2
0.95	448.5	245.4	184.7	143.1	97.6	72.3	45.6	29.6	17.3	4.2	438.9
1.00	426.8	234.2	176.8	138.1	96.3	72.6	44.4	29.8	18.2	4.0	415.8
1.10	387.5	214.7	162.5	128.2	91.9	71.1	41.8	29.5	19.3	3.9	375.0
1.20	353.5	198.4	150.3	119.3	87.4	69.1	39.1	28.6	19.8	4.1	340.3
1.30	323.0	189.6	139.9	111.5	82.9	66.7	36.6	27.5	19.8	4.2	310.4
Distance (KM)	Generic Source #1 (<10M)	Generic Source #2 (10M)	Generic Source #3 (15M)	Generic Source #4 (20M)	Generic Source #5 (25M)	Generic Source #6 (31M)	Generic Source #7 (42M)	Generic Source #8 (53M)	Generic Source #9 (65M)	Generic Source #10 (113M)	Generic Source #11 (Downwash)
1.40	296.6	182.2	130.8	104.5	78.7	64.2	34.3	26.2	19.5	4.2	284.6
1.50	273.3	174.6	122.9	98.3	74.7	61.6	32.3	24.9	19.0	4.2	262.0
1.60	252.7	167.0	115.9	92.8	71.0	59.1	31.8	23.6	18.4	4.2	242.2
1.70	234.5	159.6	109.7	87.9	67.6	56.7	31.6	22.5	17.7	4.3	224.7
1.80	218.3	152.4	104.1	83.5	64.4	54.3	31.3	21.4	17.0	4.5	211.9
1.90	203.7	145.6	99.1	79.5	61.5	52.1	30.9	20.4	16.3	4.8	198.4
2.00	190.7	139.1	94.6	75.9	58.8	50.0	30.4	19.5	15.7	5.1	186.3
2.25	164.4	124.5	85.1	68.3	53.0	45.4	28.9	18.1	14.2	5.4	160.8
2.50	143.7	112.1	77.3	62.1	48.2	41.4	27.2	17.9	12.9	5.5	140.7
2.75	127.0	101.5	70.9	56.9	38.1	38.1	25.6	17.5	11.8	5.4	124.5
3.00	113.4	92.4	65.6	52.6	35.2	35.2	24.0	17.0	11.2	5.2	112.5
4.00	78.8	67.3	50.6	40.6	27.2	27.2	29.0	14.3	10.4	4.3	78.3
5.00	59.1	54.6	41.4	33.2	22.2	22.2	15.6	12.0	9.3	3.5	58.8
6.00	56.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7	46.7
7.00	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4	40.4

*Table 5.0-5.-ISCST Predicted Maximum Concentrations ($\mu g/m^3$)[a] for Hazardous Waste Combustors Using Urban Conditions

8.00	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
9.00	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
10.00	9.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
15.00	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
20.00	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9

FOOTNOTE: [a]Based on a 1 Gram/Second Emission Rate

(B) Determine annual/hourly ratio for rural analysis. The maximum average annual dispersion coefficient is approximated by multiplying the maximum hourly dispersion coefficient (identified in Step 7(A) by the appropriate ratio selection from Table 5.0-6. The generic source number(s) [from Steps 5(C) or 5(E)], urban/rural designation (from Step 6), and the terrain type are used to select the appropriate scaling factor. Use the noncomplex terrain designation for all sources located in flat terrain, for all sources where the physical stack height of the worst-case stack is less than or equal to 10 m, for all sources where the worst-case stack is less than the minimum GEP, and for those sources where all of the TAESH values in Step 5(E) are greater than zero. Use the complex terrain designation in all other situations.

(C) Determine maximum average annual dispersion coefficient. The maximum average annual dispersion coefficient is determined by multiplying the maximum hourly dispersion coefficient (Step 7(A)) by its corresponding annual/hourly ratio (Step 7(B)).

Terrain	Distance from stack (m)	Generic source No.	Maximum hourly dispersion coefficient ($\mu g/m^3/g/sec$)	Annual hourly ratio	Maximum annual dispersion coefficient ($\mu g/m^3/g/sec$)[1]
Flat	0-20.0 0-0.5 >0.5-2.5				
Rolling or Complex	>2.5-5.0 >5.0-20.0				

FOOTNOTE: [1]Maximum hourly dispersion coefficient times annual/hourly ratio.

Step 8: Estimate Maximum Ambient Air Concentrations - see procedures prescribed in Chapter 12, Section 8 of these rules and regulations.

Step 9: Determine Compliance with Regulatory Limits-see procedures prescribed in Chapter 12, Section 8 of these rules and regulations.

Step 10: Multiple Stack Method (Optional)

This option is a special case procedure that may be helpful when (1) the facility exceeded the regulatory limits for one or more pollutants, as detailed in Step 9, and (2) the facility has multiple stacks with substantially different emission rates and effective release heights. Only those pollutants that fail the Step 9 screening limits need to be addressed in this exercise.

This procedure assesses the environmental impacts from each stack and then sums the results to estimate total impacts. This option is conceptually the same as the basic approach (Steps 1 through 9) and does not involve complex calculations. However, it is more time-consuming and is recommended only if the basic approach fails to meet the risk criteria. The procedure is outlined below.

(A) Compute effective stack heights for each stack.[8]

FOOTNOTE: [8]Follow the procedure outlined in Step 4 of the basic screening procedure to determine the GEP for each stack. If a stack's physical height exceeds the maximum GEP, use the maximum GEP values. If a stack's physical height is less than the minimum GEP, use generic source number 11 in the subsequent steps of this analysis. Follow the procedure in Steps 5(A) and 5(B) to determine the effective height of each stack.

Stack No.	GEP stack height (m)	Flow rate (m^3/sec)	Exit temp (°K)	Plume rise (m)	Effective stack height (m)
1					
2					
3					

Add an additional page if more than three stacks are involved. Circle the maximum and minimum effective stack heights.

(B) Determine if this multiple-stack screening procedure will likely produce less conservative results than the procedure in Steps 1 through 9. To do this, compute the ratio of maximum-to-minimum effective stack height:

If the above ratio is greater than 1.25, proceed with the remaining steps. Otherwise, this option is less likely to significantly reduce the degree of conservatism in the screening method.

(C) Determine if terrain adjustment is needed and select generic source numbers. Select the shortest stack height and maximum terrain rise out to 5 km from Step 1 and determine if the facility is in flat terrain.

Shortest stack height (m) = __________
Maximum terrain rise in meters out to 5 km = __________

$$\frac{\text{Terrain Rise (m)}}{\text{Shortest Stack Height (m)}} \text{ X } 100 = \_\_\_\_\_\_\_\_ \%$$

If the value above is greater than 10 percent, the terrain is considered nonflat; proceed to Step 10(D). If the ratio is less than or equal to 10 percent, the terrain is considered flat. Identify the generic source numbers based on effective stack heights computed in Step 10(A). Refer to Table 5.0-2 provided earlier to identify generic source numbers. Record the generic source numbers identified and proceed to Step 10(F).

	Stack No.		
	1	2	3
Generic Source Number			

(D) Compute the TAESH and select generic source numbers (four sources located in nonflat terrain).

1. Compute the TAESH for all remaining stacks using the following equation:

HE - TR = TAESH

where:

HE = effective stack height (m)

TR = maximum terrain rise for each distance range (m)

TAESH = terrain-adjusted effective stack height (m)

Use the Table Below To Calculate the TAESH for Each Stack[9]

	Stack No.														
Distance Range (km)	0-0.5					>0.5-2.5					>2.5-5.0				
	HE	-	TR	=	TAESH	HE	-	TR	=	TAESH	HE	-	TR	=	TAESH
1		-		=			-		=			-		=	
2		-		=			-		=			-		=	
3		-		=			-		=			-		=	

FOOTNOTE: [9] Refer to Step 1 for terrain adjustment data. Note that the distance from the source to the outer radii of each range is used. For example, for the range >0.5-2.5 km, the maximum terrain rise in the range 0.0-2.5 km is used.

For those stacks where the terrain rise within a distance range is greater than the effective stack height (i.e., HE-TR is less than zero), the TAESH for that distance range is set equal to zero, and generic source number 1 should be used for that distance range for all subsequent distance ranges. Additionally, for all stacks with a physical stack height of less than or equal to 10 meters, use generic source number 1 for all distance ranges.[10] For the remaining stacks, proceed to Step 10(D)(2).

FOOTNOTE: [10] This applies to all stacks less than or equal to 10 meters regardless of the terrain classification.

2. For the remaining stacks, refer to Table 5.0-2 and, for each distance range, identify the generic source number that includes the TAESH. Use the values obtained from Steps 10(D)(1) and 10(D)(2) to complete the following summary worksheet;

GENERIC SOURCE NUMBER AFTER TERRAIN ADJUSTED (If Needed)

Stack No.	0-0.5 km	>0.5-2.5 km	>2.5-5.0 km
1			
2			
3			

(E) Identify maximum average hourly dispersion coefficients. Based on the land use classification of the site (e.g., urban or rural), use either Table 5.0-4 or Table 5.0-5 to determine the appropriate dispersion coefficient for each distance range for each stack. Begin at the minimum fenceline distance indicated in Step 7(B) and record on Worksheet 5.0-1 the dispersion coefficient for each stack/distance range. For stacks located in facilities in flat terrain, the generic source numbers were computed in Step 10(C). For stacks located in facilities in rolling and complex terrain, the generic source numbers were computed in Step 10(D). For flat terrain applications and for stacks with a physical height of less than or equal to 10 meters, only one generic source number is used per stack for all distance ranges. For other situations up to three generic source numbers may be needed per stack (i.e., a unique generic source number per distance range). In Tables 5.0-4 and 5.0-5, the dispersion coefficients for distances of 6 km to 20 km are the same for all generic source numbers in order to conservatively represent terrain beyond 5 km (past the limits of the terrain analysis).

Worksheet 5.0-1 Dispersion Coefficient by Downwind Distance[1]

Distance	Stack 1	Stack 2	Stack 3
0.20			
0.25			
0.30			
0.35			
0.40			
0.45			

Distance	Stack 1	Stack 2	Stack 3
0.50			
0.55			
0.60			
0.65			
0.70			
0.75			
0.80			
0.85			
0.90			
0.95			
1.00			
1.10			
1.20			
1.30			
1.40			
1.50			
1.60			
1.70			
1.80			
1.90			
2.00			
2.25			
2.50			
2.75			
3.00			
4.00			
5.00			
6.00			
7.00			
8.00			
9.00			
10.00			
15.00			
20.00			

Note: This procedure places all stacks at the same point, but allows for consideration of different effective stack heights. The distance to the closest boundary (extracted from Step 1) should be the closest distance to any stack.

(F) Estimate maximum hourly ambient air concentrations. In this step, pollutant-specific emission rates are multiplied by appropriate dispersion coefficients to estimate ambient air concentrations. For each stack, emissions are multiplied by the dispersion coefficient selected in Step 10(E) and summed across all stacks to estimate ambient air concentrations at various distances from the facility. From these summed concentrations, the maximum hourly ambient air concentration is selected. First, select the maximum emission rate of the pollutant.[11] Record these data in the spaces provided below.[12]

FOOTNOTE: [11] Recall that it is recommended that this analysis be performed for only one or two pollutants. The pollutants chosen for this analysis should be those that show the most significant exceedances of the risk threshold.

FOOTNOTE: [12] Refer to Step 8 of the basic screening procedure. At this point in the screening procedure, annual emissions are used to represent hourly average emission rates. These values will be adjusted by the annual/hourly ratio to estimate annual average concentrations.

Maximum Annual Emmision Rates (G/Sec)

Pollutant	Stack 1	Stack 2	Stack 3

Complete a separate copy of Worksheet 5.0-2 for each pollutant and select the highest hourly concentration from the summation column at the far right of the worksheet. Record the maximum hourly air concentration for each pollutant analyzed (add additional lines if needed):

Pollutant	Maximum hourly air concentration

Worksheet 5.0-2 Maximum Hourly Ambient Air Concentration

Pollutant

Total Distance (km)	Stack 1 ER X DC = C	Stack 2 ER X DC = C	Stack 3 ER X DC = C	Summed Concentration from all Stacks
0.20	X =	X =	X =	
0.25	X =	X =	X =	
0.30	X =	X =	X =	
0.35	X =	X =	X =	
0.40	X =	X =	X =	
0.45	X =	X =	X =	
0.50	X =	X =	X =	
0.55	X =	X =	X =	
0.60	X =	X =	X =	
0.65	X =	X =	X =	
0.70	X =	X =	X =	
0.80	X =	X =	X =	
0.85	X =	X =	X =	
0.90	X =	X =	X =	
0.95	X =	X =	X =	
1.00	X =	X =	X =	
1.10	X =	X =	X =	
1.20	X =	X =	X =	
1.30	X =	X =	X =	
1.40	X =	X =	X =	
1.50	X =	X =	X =	

ER = Annual Average Emission Rate
DC = Hourly Dispersion Coefficient (from Worksheet 5.0-1)
C = Estimated Maximum Hourly Ambient Air Concentration

Worksheet 5.0-2 Maximum Hourly Ambient Air Concentration

Pollutant

Total Distance (km)	Stack 1 ER X DC = C	Stack 2 ER X DC = C	Stack 3 ER X DC = C	Summed Concentration from all Stacks
1.60	X =	X =	X =	
1.70	X =	X =	X =	
1.80	X =	X =	X =	
1.90	X =	X =	X =	
2.00	X =	X =	X =	
2.25	X =	X =	X =	
2.50	X =	X =	X =	
2.75	X =	X =	X =	
3.00	X =	X =	X =	
4.00	X =	X =	X =	
5.00	X =	X =	X =	
6.00	X =	X =	X =	
7.00	X =	X =	X =	
8.00	X =	X =	X =	
9.00	X =	X =	X =	
10.00	X =	X =	X =	
15.00	X =	X =	X =	
20.00	X =	X =	X =	

ER = Annual Average Emission Rate
DC = Hourly Dispersion Coefficient (from Worksheet 5.0-1)
C = Estimated Maximum Hourly Ambient Air Concentration

Worksheet 5.0-2 Maximum Ambient Air Concentration

Pollutant

Total Distance (km)	Stack 1 ER X DC = C	Stack 2 ER X DC = C	Stack 3 ER X DC = C	Summed Concentration from all Stacks
1.60	X =	X =	X =	
1.70	X =	X =	X =	
1.80	X =	X =	X =	
1.90	X =	X =	X =	
2.00	X =	X =	X =	
2.25	X =	X =	X =	
2.50	X =	X =	X =	
2.75	X =	X =	X =	
3.00	X =	X =	X =	
4.00	X =	X =	X =	
5.00	X =	X =	X =	
6.00	X =	X =	X =	
7.00	X =	X =	X =	
8.00	X =	X =	X =	
9.00	X =	X =	X =	
10.00	X =	X =	X =	
15.00	X =	X =	X =	
20.00	X =	X =	X =	

ER = Annual Average Emission Rate
DC = Hourly Dispersion Coefficient (from Worksheet 5.0-1)
C = Estimated Maximum Hourly Ambient Air Concentration(G) Determine the complex/noncomplex designation for each stack. For each stack, subtract the maximum terrain rise within 5 km of the site from the physical stack height and designate the stack as either complex or noncomplex. If the stack height minus the maximum terrain rise (within 5 km) is greater than zero or if the stack is less than 10 meters in physical height, then assign the stack a noncomplex designation. If the stack height minus the maximum terrain rise (within 5 km) is less than or equal to zero, then assign the stack a complex designation.

Perform the following computation for each stack and record the information in the spaces provided. Check in the spaces provided whether the stack designation is complex or noncomplex.

Stack No.	Stack height (m)		Maximum terrain rise (m)		Complex	Noncomplex
1.0		-		= (m)		
2.0		-		= (m)		

3.0	-	= (m)

(H) Identify annual/hourly ratios. Extract the annual/hourly ratios for each stack by referring to Table 5.0-6. Generic source numbers (from Steps 10(C) or 10(D), urban/rural designation (from Step 6)), and complex or noncomplex terrain designations (from Step 10(G)) are used to select the appropriate scaling factor needed to convert hourly maximum concentrations to estimates of annual average concentrations.

Complete the following table:[13]

FOOTNOTE: [13] If any stack (excluding generic stack number 1 and 11) in Step 10(D) shows a negative terrain adjusted stack height, use the complex terrain annual/hourly ratios.

Stack No.	Generic source No. steps 10 (C or D)			Annual/hourly ratio (from table 5.0-6)		
	Distance ranges (km)			Distance ranges (km)		
	0-0.5	>0.5-2.5	>2.5-5.0	0-0.5	>0.5-2.5	>2.5-5.0
1						
2						
3						

(I) Select the highest annual/hourly ratio among all of the stacks,[14] and then estimate the maximum annual average ambient air concentrations for each pollutant by completing the following table, where:

> FOOTNOTE: [14] As an option, the user can identify the stack with the highest ratio for each distance range (rather than the absolute highest). In this case, extra sheets would be needed to show estimated annual average concentrations from each stack by multiplying emission rate times maximum hourly dispersion coefficient times maximum annual/hourly ratio for applicable distance range. Then sum across all stacks for each downwind distance.

C = Maximum total hourly ambient air concentration ($\mu g/m^3$) for pollutant "N" from Step 10(F),
C_a = Maximum annual average air concentration for pollutant "N" ($\mu g/m^3$),
R = Annual/hourly ratio.

Table 5.0-6.-95th Percentile of Annual/Hourly Ratios

Noncomplex Terrain			Complex Terrain		
Source	Urban	Rural	Source	Urban	Rural
1	0.019	0.014	1	0.020	0.053
2	0.033	0.019	2	0.020	0.053
3	0.031	0.018	3	0.030	0.057
4	0.029	0.017	4	0.051	0.047
5	0.028	0.017	5	0.067	0.039
6	0.028	0.017	6	0.059	0.034
7	0.031	0.015	7	0.036	0.031
8	0.030	0.013	8	0.026	0.024
9	0.029	0.011	9	0.026	0.024
10	0.029	0.008	10	0.017	0.013
11	0.018	0.015	11	0.020	0.053

Pollutant	C_a (µg/m^3)	X	R	=	C_a (µg/m^3)
		X		=	
		X		=	

(J) Use the maximum annual average concentrations from Step 10(I) to determine compliance with regulatory requirements.

SECTION 6.0-SIMPLIFIED LAND USE CLASSIFICATION PROCEDURE FOR COMPLIANCE WITH TIER I AND TIER II LIMITS

6.1 Introduction

This Section provides a simplified procedure to classify areas in the vicinity of boilers and industrial furnace sites as urban or rural in order to set risk-based emission limits under Chapter 12, Section 8 of these rules and regulations. Urban/rural classification is needed because dispersion rates differ between urban and rural areas and thus, the risk per unit emission rate differs accordingly. The combination of greater surface roughness (more buildings/structures to generate turbulent mixing) and the greater amount of heat released from the surface in an urban area (generates buoyancy-induced mixing) produces greater rates of dispersion. The emission limit tables in the regulation, therefore, distinguish between urban and rural areas.

*   EPA guidance (EPA 1986)[1] provides two alternative procedures to determine whether the character of an area is predominantly urban or rural. One procedure is based on land use typing and the other is

based on population density. Both procedures require consideration of characteristics within a 3-km radius from a source, in this case the facility stack(s). The land use typing method is preferred because it more directly relates to the surface characteristics that affect dispersion rates. The remainder of this discussion is, therefore, focused on the land use method.

* While the land use method is more direct, it can also be labor-intensive to apply. For this discussion, the land use method has been simplified so that it is consistent with EPA guidance (EPA 1986; Auer 1978), while streamlining the process for the majority of applications so that a clear-cut decision can be made without the need for detailed analysis. Table 6.0-1 summarizes the simplified approach for classifying areas as urban or rural. As shown, the applicant always has the option of applying standard (i.e., more detailed) analyses to more accurately distinguish between urban and rural areas. However, the procedure presented here allows for simplified determinations, where appropriate, to expedite the permitting process.

Table 6.0-1.-Classification of Land Use Types

Type[1]	Description	Urban or rural designation[2]
I1	Heavy Industrial	Urban.
I2	Light/Moderate Industrial	Urban.
C1	Commercial	Urban.
R1	Common Residential (Normal Easements)	Rural.
R2	Compact Residential (Single Family)	Urban.
R3	Compact Residential (Multi-Family)	Urban.
R4	Estate Residential (Multi-Acre Plots)	Rural.
A1	Metropolitan Natural	Rural.
A2	Agricultural	Rural.
A3	Undeveloped (Grasses/Weeds)	Rural.
A4	Undeveloped (Heavily Wooded)	Rural.
A5	Water Surfaces	Rural.

* FOOTNOTE: [1] EPA, Guideline on Air Quality Models (Revised), EPA-450/2-78-027R, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, July, 1986.
FOOTNOTE: [2] Auer, August H. Jr., "Correlation of Land Use and Cover with Meteorological Anomalies," Journal of Applied Meteorology, pp. 636-643, 1978.

6.2 Simplified Land Use Process

The land use approach considers four primary land use types: industrial (I), commercial (C), residential (R), and agricultural (A). Within These primary classes, subclasses are identified, as shown in table 6.0-1. The goal is to estimate the percentage of the area within a 3-km radius that is urban type and the percentage that is rural type. Industrial and commercial areas are classified as urban; agricultural areas are classified as rural.

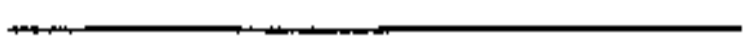
The delineation of urban and rural areas, however, can be more difficult for the residential type areas shown in table 6.0-1. The degree of resolution shown in table 6.0-1 for residential areas often cannot be identified without conducting site area inspections and/or referring to zoning maps. This process can require extensive analysis, which, for many applications, can be greatly streamlined without sacrificing confidence in selecting the appropriate urban or rural classification.

The fundamental simplifying assumption is based on the premise that many applications will have clear-cut urban/rural designations, i.e., most will be in rural settings that can be definitively characterized through a brief review of topographical maps. The color coding on USGS topographical maps provides the most effective means of simplifying the typing scheme. The suggested typing designations for the color codes found on topographical maps are as follows:

Green	Wooded areas (rural).
White	White areas generally will be treated as rural. This code applies to areas that are unwooded and do not have densely packed structures which would require the pink code (house omission tint). Parks, industrial areas, and unforested rural land will appear as white on the topographical maps. Of these categories, only the industrial areas could potentially be classified as urban based on EPA 1986 or Auer 1978. Industrial areas can be easily identified in most cases by the characteristics shown in Figure 6.0-1. For this simplified procedure, white areas that have an industrial classification will be treated as urban areas.

Figure 6.0-1 Supplementary Publication Symbols

117 **Single track**
Line weight .005". Tie weight .003", length .04", spaced .20" center to center.

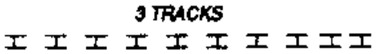


118 **Single track abandoned**
Same as existing track with space .02", dash .18". Label.

119 **Single track under construction**
Same as existing track with space .02", dash .36". Label UNDER CONSTRUCTION.

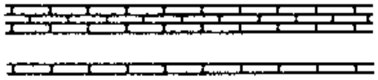
120 **Multiple main line track**
Overall width .017". Line weight .003". Tie length .052", spaced .20" center to center. If more than two tracks label, with double cross tie at point of change. Double cross tie .017" overall width.

121 **Multiple track abandoned**
Same as existing track with space .02", dash .18". Label ABANDONED.

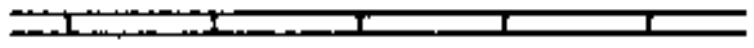


122 **Multiple track under construction**
Same as existing track with space .02", dash .36". Label UNDER CONSTRUCTION.

123 **Juxtaposition**
Alternate ties, spaced .20" center to center. Minimum space between tracks .011". Line weight for single tracks .005", multiple tracks .003".

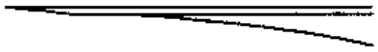


124 **Railroad in street**
Ties spaced .20" center to center. Label if narrow gage. Tie weight .003".



125 **Yards**
Line weight .003". Space between tracks .011". Ties spaced .20" center to center, maximum length to touch 8 tracks.

126 **Sidings**
Line weight .003". Scribe to scale with minimum space between tracks .011". Ties spaced .20" center to center, length .04" for single track.



176 **Large buildings**
Outline weight .003". When width exceeds .08", hatch at 45° angle to building in NE direction, lines .002" spaced .02" center to center.

178 **Sewage disposal or filtration plant**
Line weight .003". See symbol 700 for blue hatching. Label.

196 **Tanks: oil, gas, water, etc.**
Circle .03" minimum, 10" maximum. Label as to content.

197 **Tanks: oil, gas, water, etc.**
Exceeding 10" diameter. Outline weight .003". Hatch SW-NE with .002" lines spaced .02" center to center. Label as to content.

Figure 6.0-1
Supplementary Publication Symbols

(The test for the above figures is provided below.)

117 Single track
Line weight .005" Tie weight .003", length .04", spaced .20" center to center.

118 Single track abandoned
Same as existing track with space .02", dash .18". Label

119 Single track under construction
Same as existing track with space .02", dash .38". Label UNDER CONSTRUCTION.

120 Multiple main line track
Overall width .017". Line weight .003". Tie length .052", spaced .20" center to center. If more than two tracks label, with double cross tie at point of change. Double cross tie .017" overall width.

121 Multiple track abandoned
Same as existing track with space .02", dash .18" Label ABANDONED.

122 Multiple track under construction
Same as existing track with space .02", dash .38". Label UNDER CONSTRUCTION.

123 Juxtaposition
Alternate ties, spaced .20" center to center. Minimum space between tracks .011". Line weight for single tracks .005", multiple tracks .003".

124 Railroad in street
Ties spaced .20" center to center. Label if narrow page. Tie weight .003"

125 Yards
Line weight .003". Space between tracks .011". Ties spaced .20" center to center, maximum length to touch 6 tracks.

126 Sidings
Line weight .003". Scribe to scale with minimum space between tracks .011". Ties spaced .20" center to center, length .04" for single track.

176 Large buildings
Outline weight .003". When width exceeds .06", hatch at 45^0 angle to building in NE direction, lines .002" spaced .02" center to center.

178 Sewage disposal or filtration plant
Line weight .003". See symbol 700 for blue hatching. Label.

196 Tanks: oil, gas, water, etc.
Circle .03" minimum, 10" maximum. Label as to content.

197 Tanks: oil, gas, water, etc.
Exceeding 10" diameter. Outline weight .003". Hatch SW-NE with .002" lines spaces .02" center to center. Label as to content.

SECTION 7.0 STATISTICAL METHODOLOGY FOR BEVILL RESIDUE DETERMINATIONS

This Section describes the statistical comparison of waste-derived residue to normal residue for use in determining eligibility for the Bevill exemption under 40 CFR 266.112.

7.1 Comparison of Waste-Derived Residue to Normal Residue

To be eligible for the Bevill exclusion from the definition of hazardous waste under 40 CFR 266.112(b)(1), waste-derived residue must not contain Chapter 2, Appendix H constituents that could reasonably be attributable to the hazardous waste (toxic constituents) at concentrations significantly higher than in residue generated without burning or processing hazardous waste (normal residue). Concentrations of toxic constituents in normal residue are determined based on analysis of a minimum of 10 samples representing a minimum of 10 days of operation. The statistically-derived concentrations in normal residue are determined as the upper tolerance limit (95% confidence with a 95% proportion of the sample distribution) of the normal residue concentrations. The upper tolerance limit is to be determined as described in Section 7.2 below. If changes in raw materials or fuels could lower the statistically-derived concentrations of toxic constituents of concern, the statistically-derived baseline must be re-established for any such mode of operation with the new raw material or fuel.

Concentrations of toxic constituents in waste-derived residue are determined based on the analysis of one or more samples collected over a compositing period of not more than 24 hours. Mulitple samples of the waste-derived residue may be analyzed or subsamples may be composited for analysis, provided that the sampling period does not exceed 24 hours. If more than one sample is analyzed to characterize the waste-derived residue generated over a 24-hour period, the arithmetic mean of the concentrations must be used as the waste-derived concentration for each constituent.

The concentration of a toxic constituent in the waste-derived residue is not considered to be significantly higher than in the normal residue (i.e., the residue passes the Bevill test for that constituent) if the concentration in the waste-derived residue does not exceed the statistically-derived concentration.

7.2 Calculation of the Upper Tolerance Limit

The 95% confidence with 95% proportion of the sample distribution (upper tolerance limit) is calculated for a set of values assuming that the values are normally distributed. The upper tolerance limit is a one-sided calculation and is an appropriate statistical test for cases in which a single value (the waste-derived residue concentration) is compared to the distribution of a range of values (the minimum of 10 measurements of normal residue concentrations). The upper tolerance limit value is determined as follows:

$$UTL = X + (K)(S)$$

where X = mean of the normal residue concentrations, $X = X_i/n$,

K = coefficient for sample size n, 95% confidence and 95% proportion,

S = standard deviation of the normal residue concentrations,

S = $(\Sigma\,(X_i - \bar{X})^2/(n-1))^{0.5}$

and

n = sample size.

The values of K at the 95% confidence and 95% proportion, and sample size n are given in Table 7.0-1.

For example, a normal residue test results in 10 samples with the following analytical results for toxic constituent A:

Sample No.	Concentration of constituent A (ppm)
1......................................	10
2......................................	10

3	15
4	10
5	7
6	12
7	10
8	16
9	15
10	10

The mean and the standard deviation of these measurements, calculated using the above equations, are 11.5 and 2.9, respectively. Assuming that the values are normally distributed, the upper tolerance limit (UTL) is given by:

$$\text{UTL} = 11.5 + (2.911)(2.9) = 19.9 \text{ ppm}$$

This, if the concentration of constituent A in the waste-derived residue is below 19.9 ppm, then the waste-derived residue is eligible for the Bevill exclusion for constituent A.

7.3 Normal Distribution Assumption

As noted in Section 7.2 above, this statistical approach (use of the upper tolerance limit) for calculation of the concentration in normal residue is based on the assumption that the concentration data are distributed normally. The Department is aware that concentration data of this type may not always be distributed normally, particularly when concentrations are near the detection limits. There are a number of procedures that can be used to test the distribution of a data set. For example, the Shapiro-Wilk test, examination of a histogram or plot of the data on normal probability paper, and examination of the coefficient of skewness are methods that may be applicable, depending on the nature of the data (References 1 and 2).

If the concentration data are not adequately represented by a normal distribution, the data may be transformed to attain a near normal distribution. The EPA has found that concentration data, especially when near detection levels, often exhibit a lognormal distribution. The assumption of a lognormal distribution has been used in various programs at EPA, such as in the Office of Solid Waste Land Disposal Restrictions program for determination of BDAT treatment standards. The transformed data may be tested for normality using the procedures identified above. If the transformed data are better represented by a normal distribution than the untransformed data, the transformed data should be used in determining the upper tolerance limit using the procedures in Section 7.2 above.

In all cases where the owner or operator wishes to use other than an assumption of normally distributed data or believes that use of an alternate statistical approach is appropriate to the specific data set, he/she must provide supporting rationale in the operating record that demonstrates that the data treatment is based upon sound statistical practice.

7.4 Nondetect Values

The EPA is developing guidance regarding the treatment of nondetect values (data where the concentration of the constituent being measured is below the lowest concentration for which the analytical method is valid) in carrying out the statistical determination described above. Until the guidance information is available, facilities may present their own approach to the handling of nondetect data points, but must provide supporting rationale in the operating record for consideration by the Director.

Table 7.0-1.-K Values for 95% Confidence and 95% Proportion

Sample size (n)	K
10	2.911
11	2.815

12	2.736
13	2.670
14	2.614
15	2.566
16	2.523
17	2.486
18	2.458
19	2.423
20	2.396
21	2.371
22	2.350
23	2.329
24	2.303
25	2.292

7.5 References

1. Shapiro, S.S. and Wilk, M.B. (1965), "An Analysis of Variance Test for Normality (complete samples)," Biometrika, 52,591-611.

2. Bhattacharyya, G.K. and R.A. Johnson (1977), Statistical Concepts and Methods, John Wiley and Sons, New York.

SECTION 8.0 PROCEDURES FOR DETERMINING DEFAULT VALUES FOR AIR POLLUTION CONTROL SYSTEM REMOVAL EFFICIENCIES

^ Estimates of emissions and system removal efficiencies (SREs) can be made to establish the operating limits. Subsequently, owners or operators must use emissions testing to demonstrate that emissions do not exceed allowable levels, and to establish operating limits. ^ However, initial estimates of emissions for certification of precompliance can be based on estimated or established SREs.

The SRE combines the effect of partitioning of the chorine, metals, or PM and the air pollution control system removal efficiency (APCS RE) for these pollutants. The SRE is defined as:

SRE = (species input-species emitted) / species input

The SRE can be calculated from the partitioning factor (PF) and APCS RE by the following formula:

$$SRE = 1-[(PF/100) \times (1-APCS\ RE/100)]$$

where:

PF = percentage of the pollutant partitioned to the combustion gas

Estimates of the PF and/or the APCS RE can be based on either EPA's default values or engineering judgement. EPA's `default values for the APCS RE for metals, HCl, Cl_2, and PM are described in this Section. EPA's default values for partitioning of these pollutants are described in Section 9.0.

Guidelines for the use of engineering judgement to estimate APCS REs or PFs are described in Section 9.4.

8.1 APCS RE Default Values for Metals

EPA's default assumptions for APCS RE for metals are shown in Table 8.1-1. The default values in the table are conservative estimates of the removal efficiencies for metals in BIFs, depending on the volatility of the metal and the type of APCS.

The volatility of a metal depends on the temperature, the thermal input, the chlorine content of the waste, and the identity and concentration of the metal. Metals that do not vaporize at combustion zone temperatures are classified as "nonvolatile". Such metals typically enter the APCS in the form of large particles that are removed relatively easily. Metals that vaporize in the combustion zone and condense before entering the APCS are classified as "volatile". Such metals typically enter the APCS in the form of very fine, submicron particles that are rather inefficiently removed in many APCSs. Metals that vaporize in the combustion zone and do not condense before entering the APCS are classified as "very volatile". Such metals enter the APCS in the form of a vapor that is very inefficiently removed in many APCSs.

Typically, BIFs have combustion zone temperatures high enough to vaporize any hazardous metal at concentrations sufficient to exceed risk-based emission limits. For this reason, the default assumption is that there are no nonvolatile metals. Tables 8.1-2 and 8.1-3 are used to determine whether metals are classified as "volatile" or "very volatile" depending on the temperature entering the APCS, the thermal input, and whether the waste is chlorinated or nonchlorinated.

Table 8.1-1.-Air Pollution Control Systems (APCS) and Their Conservatively Estimated Efficiencies for Controlling Toxic Metals (%)

APCS	Metal Volatility		
	Nonvolatile	Volatile	Very Volatile
WS	40	30	20
VS-20	80	75	20
VS-60	87	75	40
ESP-1	90	75	0
ESP-2	92	80	0
ESP-4	95	80	0
WESP	90	85	40
FF	90	80	0
SD/FF	97	90	0
DS/FF	95	90	0
IWS	90	87	75

WS = Wet Scrubber including: Sieve Tray Tower, Packed Tower, Bubble Cap Tower
VS-20 = Venturi Scrubber, ca. 20-30 in W.G. Δp
VS.60 = Venturi Scrubber, ca. >60 in W.G. Δp
ESP-l= Electrostatic Precipitator; 1 stage
ESP-2 = Electrostatic Precipitator; 2 stage
ESP-4 = Electrostatic Precipitator; 4 stage
IWS = Ionizing Wet Scrubber
DS = Dry Scrubber
FF = Fabric Filter (Baghouse)
SD = Spray Dryer (Wet/Dry Scrubber)
WESP = Wet Electrostatic Precipitator

Table 8.1-2.-Temperature (°F) Entering APCS Above Which Metals Are Classified as Very Volatile in Combustion of Nonchlorinated Wastes

Metal		Thermal Input (MMBtu/hr)[1]				
Name	Symbol	1	10	100	1000	10000
Arsenic	As	320	280	240	200	160
Cadmium	Cd	1040	940	860	780	720
Chromium	Cr	2000	1760	1580	1420	1380
Beryllium	Be	1680	1440	1240	1080	980
Antimony	Sb	680	600	540	480	420
Barium	Ba	2240	1820	1540	1360	1240
Lead	Pb	1280	1180	1080	1000	920
Mercury	Hg	340	300	260	220	180
Silver	Ag	1820	1640	1480	1340	1220
Thallium	Tl	900	800	700	620	540

FOOTNOTE: [1] Interpolation of thermal input is not allowed. If a BIF fires between two ranges, the APCS temperature under the higher thermal input must be used.

Example: For a BIF firing 10-100 MMBtu/hr, Mercury is considered very volatile at APCS temperatures above 260 °F and volatile at APCS temperatures of 260 °F and below.

Table 8.1-3.-Temperature (F) Entering APCS Above Which Metals Are Classified as Very Volatile In Combustion of Chlorinated Wastes

Metal		Thermal Input (MMBtu/hr)[1]				
Name	Symbol	1	10	100	1000	10000
Arsenic	As	320	280	240	200	160
Cadmium	Cd	1040	940	860	780	720
Chromium	Cr	>140	>140	>140	>140	>140
Beryllium	Be	1680	1440	1240	1080	980
Antimony	Sb	680	600	540	480	420
Barium	Ba	2060	1840	1680	1540	1420
Lead	Pb	>140	>140	>140	>140	>140
Mercury	Hg	340	300	260	220	180
Silver	Ag	1080	940	840	740	660
Thallium	Tl	900	800	700	620	540

FOOTNOTE: [1] Interpolation of thermal input is not allowed. If a BIF fires between two ranges, the APCS temperature under the higher thermal input must be used.
Example: For a BIF firing 10-100 MMBtu/hr, Mercury is considered very volatile at APCS temperatures above 260 °F and volatile at APCS temperatures of 260 °F and below.

A waste is considered chlorinated if chlorine is present in concentrations greater than 0.1 percent by weight. In the EPA guidance document "Guidance for Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators, Volume IV of the Hazardous Waste Incineration Guidance Series,"(1) one percent is used for the chlorinated/nonchlorinated cutoff. However, best engineering judgement, based on examination of pilot-scale data reported by Carroll et al. (2) on the effects of waste chlorine content on metals emissions, suggests that the 1 percent cutoff may not be sufficiently conservative.

Tables 8.1-2 and 8.1-3 were compiled based on equilibrium calculations. Metals are classified as very volatile at all temperatures above the temperature at which the vapor pressure of the metal is greater than 10 percent of the vapor pressure that results in emissions exceeding the most conservative risk-based emissions limits.

8.2 APCS RE Default Values for HCl and Cl_2

Default assumptions for APCS RE for HCl in BIFs are shown in Table 8.2-1. This table is identical to the column for other BIFs except that cement kilns have a minimum HCl removal efficiency of 83 percent. Because of the alkaline nature of the raw materials in cement kilns, most of the chlorine is converted to chloride salts. Thus, the minimum APCS RE for HCl for cement kilns is independent of the APCS train.

Removal efficiency of Cl_2 for most types of APCS is generally minimal. Therefore, the default assumption for APCS RE for Cl_2 for all APCSs is 0 percent. This is applicable to all BIFs, including cement kilns.

8.3 APCS RE Default Values for Ash

Default assumptions for APCS RE for PM are also shown in Table 8.1-4. These figures are conservative estimates of PM removal efficiencies for different types of APCSs. They are identical to the figures in the Nonvolatile APCS RE column for hazardous metals presented in Table 8.1-1 because the same collection mechanisms and collection efficiencies that apply to nonvolatile metals also apply to PM.

Table 8.2-1.-Air Pollution Control Systems (APCS) and Their conservatively Estimated Efficiencies for Removing Hydrogen Chloride (HCl) and Particulate Matter (PM) (%)

APCD	HCl		
	Cement kilns	Other BIFs	PM
WS	97	97	40
VS-20	97	97	80
VS-60	98	98	87
ESP-1	83	0	90
ESP-2	83	0	92
ESP-4	83	0	95
WESP	83	70	90
FF	83	0	90
SD/FF	98	98	97
DS/FF	98	98	95
WS/IWS	99	99	95
IWS	99	99	90

WS = Wet Scrubber including: Sieve Tray Tower, Packed Tower, Bubble Cap Tower
PS = Proprietary Wet Scrubber Design (A number of proprietary wet scrubbers have come on the market in recent years that are highly efficient on both particulates and corrosive gases. Two such units are offered by Calvert Environmental Equipment Co. and by Hydro-Sonic Systems, Inc.).
VS-20 = Venturi Scrubber, ca. 20-30 in W.G. Δp
VS-60 = Venturi Scrubber, ca. >60 in W.G. Δp
ESP-l = Electrostatic Precipitator; 1 stage
ESP-2 = Electrostatic Precipitator; 2 stage
ESP-4 = Electrostatic Precipitator; 4 stage
IWS = Ionizing Wet Scrubber
DS = Dry Scrubber
FF = Fabric Filter (Baghouse)
SD = Spray Dryer (Wet/Dry Scrubber)

8.4 References

1. U.S. Environmental Protection Agency. "Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators," Office of Solid Waste,

Washington, D.C., August 1989.

2. Carroll, G.J., R.C. Thurnau, R.E. Maurnighan, L.R. Waterland, J.W. Lee, and D.J. Fournier. The Partitioning of Metals in Rotary Kiln Incineration. Proceedings of the Third International Conference on New Frontiers for Hazardous Waste Management. NTIS Document No. EPA/600/9-89/072, p. 555 (1989).

SECTION 9.0 PROCEDURES FOR DETERMINING DEFAULT VALUES FOR PARTITIONING OF METALS, ASH, AND TOTAL CHLORIDE/CHLORINE

Pollutant partitioning factor estimates can come from two sources: default assumptions or engineering judgement. EPA's default assumptions are discussed below for metals, HCl, Cl_2, and PM. The default assumptions are used to conservatively predict the partitioning factor for several types of BIFs. Engineering judgement-based partitioning factor estimates are discussed in Section 9.4.

9.1 Partitioning Default Value for Metals

To be conservative, the Agency is assuming that 100 percent of each metal in each feed stream is partitioned to the combustion gas. Owners/operators may use this default value or a supportable, site-specific value developed following the general guidelines provided in Section 9.4.

9.2 Special Procedures for Chlorine, HCl, and Cl_2

The EPA has established the special procedures presented below for chlorine because the emission limits are based on the pollutants HCl and Cl_2 formed from chlorine fed to the combustor. Therefore, the owner/operator must estimate the controlled emission rate of both HCl and Cl_2 and show that they do not exceed allowable levels.

1. The default partitioning value for the fraction of chlorine in the total feed streams that is partitioned to combustion gas is 100 percent. Owners/operators may use this default value or a supportable, site-specific value developed following the general guidelines provided in Section 9.4.

2. To determine the partitioning of chlorine in the combustion gas to HCl versus Cl_2, either use the default values below or use supportable site-specific values developed following the general guidelines provided in Section 9.4.

- For BIFs excluding halogen acid furnaces (HAFs), with a total feed stream chlorine/hydrogen ratio #0.95, the default partitioning factor is 20 percent Cl_2, 80 percent HCl.

- For HAFs and for BIFs with a total feed stream chlorine/hydrogen ratio >0.95, the default partitioning factor is 100 percent Cl_2.

3. To determine the uncontrolled (i.e., prior to acid gas APCS) emission rate of HCl and Cl_2, multiply the feed rate of chlorine times the partitioning factor for each pollutant. Then, for HCl, convert the chlorine emission rate to HCl by multiplying it by the ratio of the molecular weight of HCl to the molecular weight of Cl (i.e., 36.5/35.5). No conversion is needed for Cl_2.

9.3 Special Procedures for Ash

This Section: (1) Explains why ash feed rate limits are not applicable to cement and light-weight aggregate kilns; (2) presents the default partitioning values for ash; and (3) explains how to convert the 0.08 gr/dscf, corrected to 7% O_2, PM emission limit to a PM emission rate.

Waiver for Cement and Light-Weight Aggregate Kilns. For cement kilns and light-weight aggregate kilns, raw material feed streams contain the vast majority of the ash input, and a significant amount of the ash in the feed stream is entrained into the kiln exhaust gas. For these devices, the ash content of the hazardous waste stream is expected to have a negligible effect on total ash emissions. For this reason, there is no ash feed rate compliance limit for cement kilns or light-weight aggregate kilns. Nonetheless, cement kilns and light-weight aggregate kilns are required to initially certify that PM emissions are not likely to exceed the PM limit, and subsequently, certify through compliance testing that the PM limit is not exceeded.

Default Partitioning Value for Ash. The default assumption for partitioning of ash depends on the feed stream firing system. There are two methods by which materials may be fired into BIFs: Suspension-firing and bed-firing.

The suspension category includes atomized and lanced pumpable liquids and suspension-fired pulverized solids. The default partitioning assumption for materials fired by these systems is that 100 percent of the ash partitions to the combustion gas.

The bed-fired category consists principally of stoker boilers and raw materials (and in some cases containerized hazardous waste) fed into cement and light-weight aggregate kilns. The default partitioning assumption for materials fired on a bed is that 5 percent of the ash partitions to the combustion gas.

Converting the PM Concentration-Based Standard to a PM Mass Emission Rate. The emission limit for BIFs is 0.08 gr/dscf, corrected to 7% 0_2, unless a more stringent standard applies [e.g., a New Source Performance Standard (NSPS) or a State standard implemented under the State Implementation Plan (SIP)]. To convert the 0.08 gr/dscf standard to a PM mass emission rate:

1. Determine the flue gas 0_2 concentration (percent by volume, dry) and flue gas flow rate (dry standard cubic feet per minute); and
2. Calculate the allowable PM mass emission rate by multiplying the concentration-based PM emission standard times the flue gas flow rate times a dilution correction factor equal to [(21-0_2 concentration from step 1)/(21-7)].

9.4 Use of Engineering Judgement To Estimate Partitioning and APCS RE Values

Engineering judgement may be used in place of EPA's conservative default assumptions to estimate partitioning and APCS RE values provided that the engineering judgement is defensible and properly documented. To properly document engineering judgement, the owner/operator must keep a written record of all assumptions and calculations necessary to justify the APCS RE used. The owner/operator must provide this record to the Director upon request and must be prepared to defend the assumptions and calculations used.

If the engineering judgement is based on emissions testing, the testing will often document the emission rate of a pollutant relative to the feed rate of that pollutant rather than the partitioning factor or APCS RE.

Examples of situations where the use of engineering judgement may be supportable to estimate a partitioning factor, APCS RE, or SRE include:

- Using emissions testing data from the facility to support an SRE, even though the testing may not meet full QA/QC procedures (e.g., triplicate test runs). The closer the test results conform with full QA/QC procedures and the closer the operating conditions during the test conform with the established operating conditions for the facility, the more supportable the engineering judgement will be.

- Applying emissions testing data documenting an SRE for one metal, including nonhazardous surrogate metals to another less volatile metal.

- Applying emissions testing data documenting an SRE from one facility to a similar facility.

- Using APCS vendor guarantees of removal efficiency.

9.5 Restrictions on Use of Test Data

The measurement of an SRE or an APCS RE may be limited by the detection limits of the measurement technique. If the emission of a pollutant is undetectable, then the calculation of SRE or APCS RE should be based on the lower limit of detectability. An SRE or APCS RE of 100 percent is not acceptable.

Further, mass balance data of facility inputs, emissions, and products/residues may not be used to support a partitioning factor, given the inherent uncertainties of such procedures. Partitioning factors other than the default values may be supported based on engineering judgement, considering, for example, process chemistry. Emissions test data may be used to support an engineering judgement-based SRE, which includes both partitioning and APCS RE.

9.5 References

1. Barton, R.G., W.D. Clark, and W.R. Seeker. (1990) "Fate of Metals in Waste Combustion Systems". Combustion Science and Technology. 74, 1-6, p. 327

SECTION 10.0 ALTERNATIVE METHODOLOGY FOR IMPLEMENTING METALS CONTROLS

Reserved. ^

Appendix 1 to Appendix I-Statistics

A.1 Determination of Enrichment Factor

After at least 10 initial emissions tests are performed, an enrichment factor for each metal must be determined. At the 95% confidence level, the enrichment factor, $EF_{95\%}$s, is based on the test results and is statistically determined so there is only a 5% chance that the enrichment factor at any given time will be larger than $EF_{95\%}$. Similarly, at the 99% confidence level, the enrichment factor, $EF_{99\%}$, is statistically determined so there is only a 1% chance that the enrichment factor at any given time will be larger than $EF_{99\%}$.

For a large number of samples (n > 30), $EF_{95\%}$ is based on a normal distribution, and is equal to:

$$EF_{95\%} = EF + z_c \sigma \quad (1)$$

where:

$$\overline{EF} = \frac{\sum_{i=1}^{n} EF_i}{n} \quad (2),$$

$$\sigma = \left[\frac{\sum_{i=1}^{n} (EF_i - \overline{EF})^2}{n} \right]^{1/2} \quad (3)$$

For a 95% confidence level, z_c is equal to 1.645.

For a small number of samples (n < 30), $EF_{95\%}$ is based on the t-distribution and is equal to:

$$EF_{95\%} = \overline{EF} + t_c S \quad (4)$$

where the standard deviation, S, is defined as:

$$S = \left[\frac{\sum_{i=1}^{n} (EF_i - \overline{EF})^2}{n-1} \right]^{1/2} \quad (5)$$

t_c is a function of the number of samples and the confidence level that is desired. It increases in value as the sample size decreases and the confidence level increases. The 95% confidence level is used in this method to calculate the "violation" kiln dust metal concentration limit; and the 99% confidence level is sometimes used to calculate the "conservative" kiln dust metal concentration limit. Values of t_c are shown in table A-1 for various degrees of freedom (degrees of freedom = sample size-1) at the 95% and 99% confidence levels. As the sample size approaches infinity, the normal distribution is approached.

A.2 Comparison of Enrichment Factor Groups

To determine if the enrichment factors measured in the quarterly tests are significantly different from the enrichment factors determined in the initial Step 2 tests, the t-test is used. In this test, the value t_{meas}:

$$t_{meas} = \frac{\overline{EF_1} - \overline{EF_2}}{\sigma_t \left(\frac{1}{n_1} + \frac{1}{n_2} \right)^{1/2}} \quad (6)$$

Table A-1.-t-Distribution

n-1 or n_1 + n_2-2	$t_{.95}$	$t_{.99}$
1	6.31	31.82
2	2.92	6.96
3	2.35	4.54
4	2.13	3.75
5	2.02	3.36
6	1.94	3.14
7	1.90	3.00
8	1.86	2.90
9	1.83	2.82
10	1.81	2.76
11	1.80	2.72
12	1.78	2.68
13	1.77	2.65
14	1.76	2.62
15	1.75	2.60
16	1.75	2.58
17	1.74	2.57
18	1.73	2.55
19	1.73	2.54
20	1.72	2.53
25	1.71	2.48
30	1.70	2.46
40	1.68	2.42
60	1.67	2.39
120	1.66	2.36
4	1.645	2.33

$$\sigma_t = \left(\frac{(n_1-1)\,S_1^2+(n_2-1)\,S_2^2}{n_1+n_2-2} \right) \frac{1}{2} \qquad (7)$$

is compared to t_{crit} at the desired confidence level. The 95% confidence level is used in this method. Values of t_{crit} are shown in table A-1 for various degrees of freedom (degrees of freedom n_1 + n_2 - 2) at the 95% and 99% confidence levels. If t_{meas} is greater then t_{crit}, it can be concluded with 95% confidence that the two groups are not from the same population.

A.3 Rejection of Data

If the concentration of any hazardous metal in the "required" kiln dust sample exceeds the kiln dust metal concentration limit, the "spare" samples are analyzed. If the average of the combined "required" and "spare" values is still above the limit, a statistical test is used to decide if the upper value can be rejected.

The "Q-test" is used to determine if a data point can be rejected. The difference between the questionable result and its neighbor is divided by the spread of the entire data set. The resulting ratio, Q_{meas}, is then compared with rejection values that are critical for a particular degree of confidence, where Q_{meas} is:

The 90% confidence level for data rejection is used in this method. Table A-2 provides the values of Q_{crit} at the 90% confidence level. If Q_{meas} is larger than Q_{crit}, the data point can be discarded. Only one data point from a sample group can be rejected using this method.

Table A-2.-Critical Values for Use in the Q-Test

n	Q_{crit}
3	0.94
4	0.76
5	0.64
6	0.56
7	0.51
8	0.47
9	0.44
10	0.41

$$\sigma_{meas} = \frac{DMC_{highest} - DMC_{next\ highest}}{DMC_{highest} - DMC_{lowest}} \qquad (8)$$

Appendix J - Lead-bearing Materials that may be Processed in Exempt Lead Smelters

A. Exempt Lead-Bearing Materials When Generated or Originally Produced By Lead-Associated Industries[1]

> [FOOTNOTE: [1]Lead-associated industries are lead smelters, lead-acid battery manufacturing, and lead chemical manufacturing (e.g., manufacturing of lead oxide or other lead compounds).]

Acid dump/fill solids

Sump mud

Materials from laboratory analyses

Acid filters

Baghouse bags

Clothing (e.g., coveralls, aprons, shoes, hats, gloves)

Sweepings

Air filter bags and cartridges

Respiratory cartridge filters

Shop abrasives

Stacking boards

Waste shipping containers (e.g., cartons, bags, drums, cardboard)

Paper hand towels

Wiping rags and sponges

Contaminated pallets

Water treatment sludges, filter cakes, residues, and solids

Emission control dusts, sludges, filter cakes, residues, and solids from lead-associated industries (e.g., K069 and D008 wastes)

Spent grids, posts, and separators

Spent batteries

Lead oxide and lead oxide residues

Lead plates and groups

Spent battery cases, covers, and vents

Pasting belts

Water filter media

Cheesecloth from pasting rollers
Pasting additive bags

Asphalt paving materials

B. Exempt Lead-Bearing Materials When Generated or Originally Produced By Any Industry

Charging jumpers and clips

Platen abrasive

Fluff from lead wire and cable casings

Lead-based pigments and compounding pigment dust

APPENDIX K - Nickel or Chromium-bearing Materials that may be Processed in Exempt Nickel-chromium Recovery Furnaces

A. Exempt Nickel or Chromium-Bearing Materials when Generated by Manufacturers or Users of Nickel, Chromium, or Iron

Baghouse bags

Raney nickel catalyst
Floor sweepings

Air filters

Electroplating bath filters

Wastewater filter media

Wood pallets

Disposable clothing (coveralls, aprons, hats, and gloves)

Laboratory samples and spent chemicals

Shipping containers and plastic liners from containers or vehicles used to transport nickel or chromium-containing wastes

Respirator cartridge filters

Paper hand towels

B. Exempt Nickel or Chromium-Bearing Materials when Generated by Any Industry

Electroplating wastewater treatment sludges (F006)

Nickel and/or chromium-containing solutions

Nickel, chromium, and iron catalysts

Nickel-cadmium and nickel-iron batteries

Filter cake from wet scrubber system water treatment plants in the specialty steel industry[1]

Filter cake from nickel-chromium alloy pickling operations[1]

[FOOTNOTE: [1] If a hazardous waste under an authorized State program.]

APPENDIX L - Mercury Bearing Wastes that may be Processed in Exempt Mercury Recovery Units

These are exempt mercury-bearing materials with less than 500 ppm of Chapter 2, Appendix H organic constituents when generated by manufacturers or users of mercury or mercury products:

1. Activated carbon
2. Decomposer graphite
3. Wood
4. Paper
5. Protective clothing
6. Sweepings
7. Respiratory cartridge filters
8. Cleanup articles
9. Plastic bags and other contaminated containers
10. Laboratory and process control samples
11. K106 and other wastewater treatment plant sludge and filter cake
12. Mercury cell sump and tank sludge
13. Mercury cell process solids
14. Recoverable levels or mercury contained in soil