

06-096

Department of Environmental Protection

Maine Solid Waste Management Rules:

CHAPTER 418

BENEFICIAL USE OF SOLID WASTES

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Chapter 418: BENEFICIAL USE OF SOLID WASTES

SUMMARY: This chapter establishes the rules of the Department for the beneficial use of secondary materials. Included in this chapter are exemptions, general standards for beneficial use and licensing procedures for activities subject to these regulations.

1. Beneficial Use Activities Subject to the Requirements of this Chapter

- A. Applicability.** Unless exempted from regulation under Section 2 of this rule, any generator, processor, industrial or manufacturing facility or other person proposing to beneficially use secondary material other than in agronomic utilization must obtain a license pursuant to the applicable provisions of Chapter 400 of these rules (*General Provisions*), CMR 06-096 Chapter 400, and this rule. The term "secondary material" when used in this chapter means a solid waste, separated from other solid wastes, that may be suitable for beneficial use. The secondary material may be a product having solid waste as a constituent. When a solid waste processing, industrial or manufacturing facility is licensed to beneficially use a secondary material for fuel, raw material substitution, or as a construction material, the generator supplying the secondary material to that licensed facility is not required to obtain a beneficial use license under the provisions of this Chapter.

Beneficial use activities approved pursuant to this chapter do not constitute disposal as defined in these rules. However, the placement of any waste as fill in a landfill constitutes disposal rather than beneficial use and must be licensed under Chapter 401 of these rules (*Landfill Siting, Design, and Operation*), CMR 06-096 Chapter 401 .

Beneficial uses of secondary materials regulated by this chapter include, but are not limited to, use in an industrial or manufacturing process, use as construction fill, or use as fuel. The following are examples of beneficial use activities:

- (1) Use of chipped tires in road construction or retaining wall backfill;
- (2) Facilities substituting secondary material for fossil or biomass fuel in a boiler;
- (3) Industrial, manufacturing or processing facilities substituting secondary material for virgin material;
- (4) Use of secondary material as construction fill;
- (5) Use of multi-fuel ash in road construction or flowable fill. As used in this chapter multi-fuel ash refers to the ash generated from combustion of the following fuels: wood, paper, pulp and paper sludge, coal, oil, and tire chips.; and
- (6) Cement kilns substituting secondary material for virgin material or for fuel.

- B. Storage of Secondary material.** Beneficial use activities that include storing secondary materials for greater than 90 days are also subject to Chapter 402 of these rules (*Transfer Stations and Storage Sites for Solid Waste*), 06-096 CMR 402.
- C. Processing of Secondary material.** Beneficial use activities that include processing secondary materials are also subject to Chapter 409 of these rules (*Processing Facilities*), CMR 06-096 Chapter 409.
- D. Agronomic Utilization of Residuals.** Residual material proposed for agronomic utilization is subject to Chapter 419 of these rules (*Agronomic Utilization of Residuals*) CMR 06-096 Chapter 419. Agronomic utilization of a residual material and another beneficial use of the residual as a secondary material may be approved in one license.
- E. Other Federal, State and Local Requirements.** Approval of the beneficial use of a secondary material under this chapter does not constitute approval of the project using the secondary material. All beneficial use activities, including activities that are exempt under this rule, must conform to any other applicable federal, state or local requirements.
- F. Innovative Beneficial Use Activities.** The Department may grant temporary approval for a pilot project or experimental project under Chapter 400, Section 3(B)(4), Limited Permits. The application requirements for a limited permit will be determined on a case by case basis.

G. Transition

Any ongoing beneficial use that was licensed by the Department prior to the effective date of this amended rule must comply with all applicable operating standards of the amended rule. Existing licenses for ongoing beneficial uses must be modified to incorporate new or amended provisions of the rule. Such modifications may be made through minor revisions to these licenses. All information necessary to demonstrate compliance with applicable provisions of the rule and to modify existing licenses must be submitted to the Department for review and approval by July 31, 2006.

H. Prohibition

- (1) The beneficial use of municipal solid waste incinerator ash which contains 4 parts per trillion or greater dioxin toxic equivalents (EPA, 1989) is prohibited except as provided for in the Maine Hazardous Waste, Septage and Solid Waste Management Act, 38 M.R.S.A. § 1304(13-C), "Use of Treated Ash in Secure Landfills"; and
- (2) It is unlawful for any person to use any secondary material in a manner not authorized by this rule or a license issued pursuant to this rule.

2. Beneficial Use Activities Not Subject To The Requirements Of This Chapter. The following beneficial use activities are exempt from regulation under this chapter.

- A. The beneficial use of chipped wood from trees, brush, and other plant material generated from land clearing or timber harvesting activities provided that the material is used for fill on the same parcel of land or right-of-way where the waste is generated and the total affected area is less than one (1) acre, or used for fuel, mulch or erosion control.

- B. The beneficial use of inert fill as fill, drainage material in construction projects or as a raw material in cement, concrete or asphalt production.
- C. The beneficial use of processed cured asphalt and soil material in paving material production, and road and parking lot construction and maintenance.
- D. The beneficial use of oil-contaminated soil material that has been stabilized with emulsified asphalt as a substitute for virgin aggregate in the production of asphalt pavement.
- E. The beneficial use of:
 - (1) 100 cubic yards or less of dredge material used on the site of generation and draining into the dredged water body;
 - (2) Dredge material from class A, class AA and class SA water bodies;
 - (3) Dredge material used on the site of generation containing less than 15% fines (material passing the #200 sieve) from representative sampling, in conformance with USEPA SW-846, of a minimum of four samples, or one sample per acre, whichever is more frequent;
 - (4) Dredge material from agricultural or residential ponds, ditches and drainage ways when the use occurs on the site of generation;
 - (5) Dredge material free from oil, grease, litter and other contaminants and that is generated from normal maintenance of storm water and erosion control structures regulated under 38 M.R.S.A. Section 420-C and Section 420-D;
 - (6) Dredge material containing less than 15% fines and that meet Appendix A levels for the listed constituents in Section 5.(A)(3) of this rule used as beach nourishment fill.
- F. The beneficial use of paper in the manufacture of paper and cardboard.
- G. The combustion or processing of secondary materials generated exclusively at a facility in that facility's lime kiln, cement kiln, bark and hogged fuel boiler, biomass or conventional fuel boiler, Kraft recovery boiler or sulfite process recovery boiler, and the combustion of wood wastes from land clearing or wood waste from wood products facilities at these facilities.
- H. The beneficial use of no more than 1000 tires in a recreation area open for use by the public.
- I. The beneficial use of no more than 1000 whole tires at a farm or a landfill as weights.
- J. The household beneficial use of no more than a total of 50 whole tires.
- K. The beneficial use of pre-separated paper, cardboard, glass, plastic, lumber, and scrap metal, including metal processed from white goods and junk vehicles, as a raw material in the manufacture of commercial products.

- L. The beneficial use of non-hazardous blast furnace slag, silica fume, and coal ash in cement production, flowable fill or concrete batching; and of non-hazardous coal, multi-fuel, or wood bottom ash in asphalt batching.
- M. The beneficial use of secondary materials generated in Maine when it is exported to another state or country.
- N. The beneficial use of tire chips used in subsurface waste water disposal units as permitted in the Maine Subsurface Waste Water Disposal Rules.
- O. The beneficial use of waste from Department supervised remedial activities when the beneficial use activity occurs at the site of generation and has been found by the Department to be acceptable following a risk evaluation.
- P. The beneficial use of utility poles as utility poles in another location.
- Q. Wood ash from the burning of wood wastes is not subject to the requirements of this chapter and is not considered a solid waste if the person proposing to beneficially use the wood ash submits written documentation to the department demonstrating that the wood ash is being used as an effective substitute for commercially available products. The user of the wood ash must submit this documentation initially and if the characteristics of the wood ash change.

Note: "Wood wastes" is defined at 06-096CMR 400(LL11) as the following: "Wood wastes" means brush, stumps, lumber, bark, wood chips, shavings, slabs, edgings, slash, sawdust and wood from production rejects, that are not mixed with other solid or liquid waste. For the purposes of this definition, "lumber" is entirely made of wood and is free from metal, plastics and coatings.

For the purposes of paragraph Q. above, any ash resulting from the burning of wood wastes is considered wood ash. No distinction is made between fly ash and bottom ash.

- 3. General Standards For Beneficial Use.** All beneficial use activities must be licensed and operated to meet the following general standards.
- A. The beneficially used secondary material must perform as an acceptable substitute for the material it is replacing.
 - B. The beneficial use will not pollute any waters of the state, contaminate the ambient air, constitute a hazard to health or welfare or create a nuisance.
 - C. The following standards and requirements of Chapter 400 of these rules must be met:
 - (1) Chapter 400.1 - Definitions
 - (2) Chapter 400.2 - Applicability
 - (3) Chapter 400.3(A), (B), (C), & (F)
 - (4) Chapter 400.4(B) - Financial Ability

- (5) Chapter 400.4(C) - Technical Ability
 - (6) Chapter 400.4(D) - Traffic. Except an applicant is presumed to meet the traffic standard if:
 - (a) The beneficial use occurs no more than once in a calendar year at the same location;
 - (b) The beneficial use results in fewer than 16 additional vehicle trips per day; or
 - (c) The project beneficially using the secondary material has been permitted under the Site Location of Development Law.
 - (7) Chapter 400.4(G) - No Unreasonable Adverse Effect On Air Quality.
 - (8) Chapter 400.8 - Right of Entry.
 - (9) Chapter 400.12 - Criminal or Civil Record.
 - (10) Chapter 400.13 - Variances.
- D. A beneficial use activity may not be located in, on, or over any protected natural resource or be located adjacent to and operated in such a manner that material or soil may be washed into any protected natural resource unless approved pursuant to Maine's *Natural Resource Protection Act*, 38 M.R.S.A. §§ 480-A to 480-Z.
- E. The beneficial use of waste in construction must be in conformance with the applicable provisions of Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices (Cumberland County Soil and Water Conservation District/Department of Environmental Protection, March, 1991) or its equivalent.
- F. The beneficial use activity must not include the use of hazardous wastes identified pursuant to Maine's *Identification of Hazardous Waste* rule, 06-096 CMR 850.

4. Beneficial Use Permit by Rule Provisions

- A. Permit by Rule for Beneficial Use of Tire Chips as Fill Material.** The permit-by-rule provisions of this section apply to the use of tire chips as a light weight, insulating, or free draining fill for roads, retaining walls, landslide stabilization, and other civil engineering applications where all of the standards of this section are met. Proposed beneficial uses of tire chips which do not meet the requirements of this section must be licensed under Section 7 of this Rule. By establishing these provisions, the Department finds that the beneficial use of the tire chips in strict conformity with these permit-by-rule provisions will meet the general standards in Section 3 of this Rule. No variances to the provisions of this section may be granted.
- 1. Notification Requirements.** At least 24 calendar days prior to the initiation of the proposed activity or use an applicant shall submit a signed permit-by-rule notification on a form provided by the Department. Public notice of the filing of this type of permit-by-rule

notification in accordance with Chapter 400, section 3(B)(1)(c) is not required. The permit-by-rule notification must include:

- (a) The applicant's name, address, telephone number, and contact person together with the appropriate application fee.
- (b) A description of the tire chips size and the proposed use.
- (c) An U.S.G.S 7.5 minute topographic map or equivalent map clearly marking the project location. GPS coordinates of the activity shall be provided in the project description.
- (d) For proposed roads, a cross-sectional view, with a horizontal scale of 1 inch = 5 feet and a vertical scale of 1 inch = 12 inches. The cross-section must clearly indicate the location and depth of each material layer as applicable (gravel, tire chips, geotextile, surface course, etc.).

2. Standards

- (a) **Tire Chip Specifications.** Tire chips shall conform to the specification of ASTM Standards referenced in D 6270-98 or Maine Department of Transportation type A or B tire chips.
- (b) The use of geotextile, Maine Department of Transportation specification 722.01 or approved equivalent, between material layers where specified is required.
- (c) **Tire Chip Lift Thickness.** The maximum compacted thickness of each tire chip lift shall not exceed twelve (12) inches.
- (d) The tire chip layer is restricted to a maximum thickness of 9.8 feet.
- (e) **Surface Course Requirements for Unpaved Roads**
 - (i) For travel ways subject to loading from passenger car and light truck traffic, a minimum of twelve (12) inches of soil material shall be placed over the tire chip layer.
 - (ii) For travel ways subject to loading from moderate to heavy truck traffic, a minimum of eighteen (18) inches of soil material shall be placed over the tire chip layer.
- (f) The tire chips shall be covered with a minimum layer of 12 inches of soil material, concrete, pavement or other suitable material, such that no waste is exposed.
- (g) **Tire Chip Storage.** Tire chips to be used may be stored in a secure location near the project that is under the control of the licensee. All excess tire chips and residue must be removed from the project area upon completion of the project.

- B. Permit By Rule For The Beneficial Use of Emulsified Asphalt Encapsulated Oil Contaminated Soil as Construction Fill.** The permit-by-rule provisions of this section apply to the use of emulsified asphalt encapsulated oil contaminated soil as a construction fill underneath paved roads and parking lots, and in other civil engineering applications where all of the standards of this section are met.

“Construction fill” (as defined in Chapter 400) means, “fill that may contain solid waste utilized to provide material for construction projects such as roads, parking lots, buildings or other structures. It does not include fill needed to re-contour an area within a landfill or where no further construction is occurring. If the construction fill contains solid waste other than inert fill, the use of the fill is regulated under Chapter 418.”

Proposed beneficial uses of emulsified asphalt encapsulated oil contaminated soils as construction fill which do not meet the requirements of this section must be licensed under Section 7 of this Rule.

By establishing these provisions, the Department finds that the beneficial use of emulsified asphalt encapsulated oil contaminated soil in strict conformity with these permit-by-rule provisions will meet the general standards in Section 3 of this Rule. No variances to the provisions of this section may be granted.

- 1. Notification Requirements.** At least 10 calendar days prior to the initiation of the proposed activity or use an applicant shall submit a signed permit-by-rule notification on a form provided by the Department. Public notice of the filing of this type of permit-by-rule notification is not required, as established in Chapter 400, section 3(B)(1)(c). The permit-by-rule notification must include:
 - (1) The applicant's name, address, telephone number, and contact person together with the appropriate application fee.
 - (2) A description of the proposed use of the construction fill.
 - (3) An U.S.G.S 7.5 minute topographic map or equivalent map clearly marking the project location. GPS coordinates of the activity shall be provided in the project description.
 - (4) For proposed roads, a cross-sectional view, with a horizontal scale of 1 inch = 5 feet and a vertical scale of 1 inch = 12 inches. The cross-section must clearly indicate the location and depth of each material layer as applicable (construction fill, paved surface course, other construction, etc.).
- 2. Standards**
 - (1) Emulsified asphalt encapsulated oil contaminated soil may not be placed in standing water or in a channeled drainage flow. It may not be used to fill any wetlands, be placed below the water table, or be allowed to wash into any water of the state.
 - (2) A layer of asphalt, concrete or a 6 inch layer of soil must completely cover the stabilized contaminated soil and must be permanently maintained. No surface exposure is allowed.

- (3) Encapsulated soil intended to be used for a project may be stored in a secure location near the project that is under the control of the licensee. All excess construction fill and residue must be removed from the project area upon completion of the project.
- (4) The beneficial use may not take place on a residential, school or public recreational property.

5. Reduced Procedures For Select Beneficial Use Activities. The reduced procedure provisions of this section apply to the beneficial use of non-hazardous multi-fuel ash as flowable fill, dredge material, and bottom ash from wood fired boilers, where all of the standards in section 3 of this rule and this section are met. Except, the beneficial use of bottom ash from wood fired boilers or from multi-fuel boilers using fuel derived from construction and demolition debris wood must be licensed under section 7 of this rule. Proposed beneficial uses which do not meet the requirements of this section must be licensed under section 7 of this rule.

A. Reduced Procedure Beneficial Use of De-watered Dredge Material As Fill Standards

- (1) Dredge material permitted for use under this section must be used in a non-residential setting and be completely and permanently covered by a concrete or asphalt paved surface, or by 6 inches of a compacted soil material.
- (2) In order to characterize dredge material intended for beneficial use, representative samples shall be collected and analyzed prior to dredging in conformance with EPA-SW 846. A minimum of 4 samples per site or one sample per acre shall be collected unless an alternative sampling plan is otherwise approved by the Department; information on sediment depth represented by each sample shall be provided. Composite samples for analysis may be approved by the Department on a case-by-case basis. Analysis must be for the following parameters:
 - (a) Total metals (mg/kg dry wgt.) including Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg).
 - (b) Semi-volatiles listed in §5.A(3) below (mg/kg dry weight).
 - (c) PCBs and dioxin TEQ unless otherwise approved by the Department, and organopesticides from commercial and agricultural ponds greater than 1/4 acre (mg/kg dry weight).
 - (d) Other parameters as required by the Department.
- (3) Dewatered dredge material which are non-hazardous and which contain constituent levels less than the following levels may be beneficially used in accordance with the provisions of this section:

Arsenic (As)	< 29 mg/kg
Cadmium (Cd)	< 8.0mg/kg
Chromium (Cr+6)	< 38 mg/kg
Lead (Pb)	< 800 mg/kg

Mercury (Hg)	<60 mg/kg
Benz[a]anthracene	<2.0 mg/kg
Benzo[b]fluoranthene	<5.0 mg/kg
Benzo[k]fluoranthene	<49.0 mg/kg
Benzo[a]pyrene	<8.0 mg/kg
Chrysene	<160 mg/kg
Dibenz[a,h]anthracene	<2.0 mg/kg
Indeno[1,2,3-c,d]pyrene	<14.0 mg/kg
PCB	< 0.74 mg/kg
Dioxin TEQ	<16 pg/g

- (4) Total chromium or lead levels exceeding 100 mg/kg, or mercury levels exceeding 4 mg/kg indicate that the dredge material may be hazardous waste. Further analysis of those parameters for TCLP is necessary.
- (5) Any non-hazardous dredge material with constituent levels exceeding those in paragraph (3) of this subsection by less than a factor of two may be beneficially used as construction fill provided that the dredge material are combined with borrow material at a proportion which will lower the contaminant levels below the levels in paragraph (3).

B. Reduced Procedure Beneficial Use of Multi-Fuel Boiler Ash or Bottom Ash from Wood Fired Boilers as Fill in Road Construction, Parking Lots and other Traveled Ways Standards

- (1) The applicant must obtain written permission from the owner of the property on which the ash is to be beneficially used.
- (2) The discharge of phosphorus must not cause adverse affects to surface waters.
- (3) The ash must be handled to prevent human exposure to ash dust by keeping the ash in a moist condition or by other approved means.
- (4) The filled area must be covered by a minimum of six (6) inches of compacted soil material or other approved uncontaminated material, or by asphalt or concrete pavement. The covering must be maintained in its original condition.

C. Reduced Procedure Beneficial Use of Multi-Fuel Boiler Ash or Bottom Ash from Wood Fired Boilers as Flowable Fill Standards

- (1) The filled area must be 100 feet from drinking water supplies.
- (2) The filled area must be covered by a minimum of six (6) inches of compacted soil material or other approved uncontaminated material or by asphalt or concrete pavement. The covering must be maintained in its original condition.

D. Reduced Procedure Application Requirements. The Department finds that the beneficial use of non-hazardous dredge material, bottom ash from wood fired boilers, and multi-fuel ash as flowable fill licensed under this reduced procedure will meet the standards of Section 3 of this rule because of the limited likelihood of adverse environmental or human health impact,

provided that the applicant submits information sufficient to meet the standards and submission requirements of section 3 and this section. The applicant shall submit to the Department, on forms provided by the Department, the following information:

- (1) A description of the secondary material and its proposed use.
 - (2) Information regarding the physical and chemical characteristics of the secondary material, including all analytical results.
 - (3) The quantities, by weight and/or volume of the secondary material.
 - (4) An U.S.G.S. 7.5 minute topographic map or equivalent map clearly marking the location(s) of the beneficial use activity. GPS coordinates of the activity shall be provided in the project description.(5) If applicable, a copy of the information on proper use that will be provided to the users of the secondary material.
 - (6) A handling and use plan including provisions for storage and de-watering of the dredge material. It must provide that the storage will not pose a hazard to public health and that the storage or beneficial use of the dredge material will not result in any illegal discharge of sediments or contaminants to waters of the State.
 - (7) If the beneficial use of ash or dredge material is proposed, a construction drawing for the location(s) of the beneficial use activity, with the property boundary and the location of ash or dredge material in plan and representative cross section views clearly marked and noted on the drawing. The cross-section must clearly indicate the location and depth of each material layer as applicable (gravel, ash geotextile, surface course, etc.).
 - (8) If the beneficial use of ash is proposed, written permission from the owner of the property on which the ash is to be beneficially used must be submitted.
 - (9) If the beneficial use of ash as a construction material under paragraph B is proposed, documentation that the beneficial use is not within the watershed of a water body classified GP-A; or, if the beneficial use is in a class GP-A watershed, a phosphorus control plan that minimizes adverse affects to surface waters must be submitted.
- 6. Fuel Substitution.** Any person proposing to beneficially use secondary materials as a fuel in a boiler or cement kiln designed to combust conventional fuels, including fossil or biomass fuels, must obtain a license pursuant to the requirements of this section and the general standards of section 3 of this rule. The substitution of secondary material(s) for conventional fuels used in a boiler or cement kiln shall not exceed 50% of total fuel by weight combusted on an average annual basis.

For the purpose of this rule, “wood from construction or demolition debris” or “CDD wood” means the wood component of solid waste resulting from construction, remodeling, repair and demolition of structures.

A. Application Requirements. The following information must be submitted to the Department in an application for a fuel substitution permit.

- (1) A description of the secondary material proposed for fuel use.

- (2) An Operations Manual in accordance with the requirements of this Section.
- (3) The most recent, full size U.S. Geological Survey topographic map (7.5 minute series, if available), or equivalent map of the area, showing the property boundary and location on that property of the boiler or cement kiln proposing the fuel substitution. GPS coordinates of the activity shall be provided in the project description.
- (4) A signed contract or letter of intent from a facility licensed to accept all residues and by-pass wastes.
- (5) A hazardous and special waste handling and exclusion plan in accordance with the provisions of Chapter 400, section 9 of these rules.
- (6) The results of a trial burn, unless such a burn is specifically waived by the Department, and any other appropriate information regarding the suitability of the waste for fuel use. Trial burns and the submission of related information shall be conducted in accordance with the following provisions:
 - (a) Prior to conducting a trial burn, the applicant shall notify the Department's Bureau of Air Quality of the proposed test burn. The following information must be submitted to the Division of Solid Waste Management, as a Letter of Intent, a minimum of ten (10) working days prior to the start of the trial burn:
 - (i) The estimated maximum annual quantity of the secondary material proposed for combustion.
 - (ii) Results of the characterization of the secondary material, including a minimum of one sample for each 100 tons of waste for the first 400 tons from each source for each proposed fuel or fuel blend proposed for study during the trial, and one sample for each 1,000 tons thereafter for the parameters below:
 - a. TCLP metals parameters;
 - b. total Arsenic, Lead, Asbestos and PCB;
 - c. physical characterization using Department approved methods; and,
 - d. other parameters as required by the Department.
 - (iii) Information outlining the objectives of the trial burn, how the secondary material waste will be transported, stored, and otherwise managed, the quantity of waste to be

burned, the scheduled times and dates of the trial burn, and an ash testing program needed to adequately characterize ash constituents and levels of pollutants.

- (b) The trial burn will be conducted per the submitted Letter of Intent and approval obtained from the Bureau of Air Quality Control. .

B. Operating Requirements. Each licensee must comply with the following operating requirements.

- (1) **Residue and Waste.** The licensee shall maintain a valid contract or agreement with a solid waste facility approved to accept by-passed waste and/or residues from the boiler or cement kiln.
- (2) **Dust, Litter and Odor Control.** The licensee shall undertake suitable measures to control dust, litter (including fines from fuel and ash) and odors resulting from the use of secondary material as a fuel.
- (3) **Storage Requirements**
 - (a) All fuel substitution licensed under this section must occur at a boiler or cement kiln designed and operated to collect, store and handle ash in enclosed buildings, or the equivalent (e.g., covered conveyors and transfer points, leak proof containers, tanks), to prevent fugitive dust emissions and to prevent direct exposure of the ash to the weather during collection, storage, handling and transport off site.
 - (b) Storage areas for secondary material for use as substitute fuel shall be clearly identified and public access excluded.
 - (c) Secondary material that cannot be used as substitute fuel by the boiler or cement kiln shall be removed and disposed of at a licensed facility at least weekly unless other procedures have been reviewed and approved by the Department.
 - (d) Licensees shall manage fuel according to a fuel management plan which shall be included in the Operations Manual for the facility. The fuel management plan shall include:
 - (i) A detailed description of the fuel storage area and its operation including: an asphalt or concrete base pad shown in plan view along with typical cross sections; provisions for leachate management, collection and disposal; and, control of wind blown fines;
 - (ii) For CDD wood fuel, limitation of the fuel pile size to no more than 8 weeks of fuel;
 - (iii) Description of fuel flow through the facility that provides for consumption of oldest fuel first and a plan view of the storage pad at a minimum scale of 1"=50' that depicts the sequence of fuel flow, oldest to newest, throughout the pad area;
 - (iv) Procedures for blending fuel;
 - (v) Procedure for the minimization of fuel stockpile volume and fuel fire risk for the duration of planned shutdowns;

- (vi) For CDD wood fuel, a Fire Safety Action Plan that includes procedures for monitoring internal pile temperatures or the use of thermal imaging devices or other technology that provide for maintaining internal pile temperatures less than 185 degrees Fahrenheit. The Fire Safety Action Plan must describe procedures and equipment that will be used when internal pile temperatures meet or exceed 185 degrees F or in the event of a pile fire. The Fire Safety Action Plan shall be submitted to the local fire safety authority for its review. If that authority makes recommendations concerning the plan, those recommendations shall be included in the plan prior to submittal to the Department. The Department may waive the requirement for a Fire Safety Action Plan upon a showing that such a plan is not warranted due to small volumes of CDD wood fuel proposed to be stored and/or short residency times in storage.
- (vii) For facilities that store fuel outside, an Environmental Monitoring Program designed and implemented in accordance with Chapter 405;
- (viii) A storage pad inspection and maintenance program that provides for annual inspection and repair of the pad.

(4) Acceptable Secondary Materials

- (a) **General Standard.** The licensee may beneficially use as a fuel substitute only the type and quantity of secondary material specifically licensed or allowed under this chapter.
- (b) **Prohibited Materials.** A licensee may not accept CDD wood as a fuel unless the Quality Assurance / Quality Control Plan required by Section 6(B)(4)(d) specifically provides that the source(s) of the wood fuel has implemented a plan for the removal of arsenic and pentachlorophenol treated wood (including but not limited to utility poles) prior to processing of the CDD wood into fuel.
- (c) **Standards for CDD Wood Fuel.** Sources of processed construction or demolition debris wood must be examined by the licensee and found to consistently produce a product that meets or exceeds the wood fuel quality standards in (i) below prior to blending with other fuels. The fuel quality standards in (ii) below must be met after any blending and prior to combustion. As used in this subsection, “source” means the facility where the processing of CDD wood into fuel occurs; and “publicly owned source” means a facility where the processing of CDD wood into fuel occurs that only accepts CDD wood that is generated in member municipalities, and that is owned by a municipality, a quasi-municipal entity, a county, a public waste disposal corporation under 38 MRA Section 1304-B, or a refuse disposal district under 38 MRSA Section 1701 et seq.
 - (i) **Fuel Quality Standards for CDD Wood**
 - a. non-combustible fraction exclusive of rocks, brick, and concrete <1%
 - b. plastics <1%
 - c. CCA (chromated copper arsenate) treated wood <1.5%

- d. #4 minus fines (for publicly owned sources regulated under the Maine Solid Waste Management Rules) 20%
- e. #4 minus fines (for sources other than publicly owned) 10%
- f. asbestos <1%

(ii) Fuel Quality Standards for Blended Biomass Wood Fuel

- g arsenic <50 mg/kg
- h lead <375 mg/kg
- i. PCB <0.74 mg/kg

(d) The licensee shall provide the Department with a Quality Assurance/Quality Control Plan for assuring that CDD wood fuel used by the facility will remain consistent with the standards above. The QA/QC plan shall be included in the Operations Manual for the facility. The plan shall include the following elements:

- (i) All work involved in certifying that the fuel meets standards in paragraph 4(c) of this section for CDD wood fuel must be done by a qualified third party, independent from the fuel source and the licensee. A minimum of 4 composite samples over a thirty day period per source is necessary to certify a new source . Annually thereafter, each source must be recertified. A minimum of 1 composite sample per 10,000 tons or if less than 40,000 tons is received from a source each year, 4 samples per year. Each sample must be a composite of a minimum of 20 one quart samples; Facilities that process fewer than 4 times per year must sample once per processing event.
- (ii) Sampling and analysis required by Section 6(B) shall be done using Department approved methods. Physical sampling and analysis must be done in conformance with procedures established in Chapter 405, section 6(C)(6).

(iii) For each source, provide:

- a. the name, location and a detailed description of the fuel processing methodology;
- b. the compliance history for the past five years;
- c. the estimated tons per year of fuel the source generates;
- d. the estimated tons per year of fuel that will be supplied to the licensee;
- e. a determination that each source has a program equivalent to the licensee's Hazardous and Special Waste Exclusion Plan referenced in Section 6(A)(5) of this rule for the removal of hazardous waste, arsenic and pentachlorophenol treated, charred or burned wood prior to processing fuel;

- f. a description of the method by which the facility will evaluate and accept or reject the fuel certification information provided by the third party fuel inspector.
 - g. documentation that each source supplies CDD wood fuel that meets or exceeds the standards in 6(B)(4)(c)(i) of this rule.
 - h. a description of the method to inspect and accept or reject each load of CDD fuel.
- (iv) On a monthly basis the boiler operator shall collect an 8-hour composite sample of the approved blended fuel from the conveyor feeding the boiler, combine 3 monthly composites for a quarterly composite, and analyze for chemical parameters listed in subsection 6(B)(4)(c)(ii) of this rule.
- (v) When the sampling conducted under sub-section 6(B)(4)(c)(iv) above detects fuel that fails to meet the CDD fuel standards the licensee shall:
- a. Retest within 7 days of receipt of notification of non-compliance with the standards and conduct: a statistical analysis in conformance with the approved QA/QC plan, of the data from the sampling and testing program; an evaluation of sources which may have caused or contributed to the possible deterioration of the fuel quality; and, an evaluation of possible errors, such as errors in sampling, analysis or mathematical problems with the test data;
 - b. Notify the Department of the results of the evaluation within 7 days of its completion;
 - c. If the evaluation confirms that the fuel does not meet the CDD fuel standards of Section (B)(4)(c), notify the source(s) of the substandard fuel;
 - d. Request submission of a report from the source(s) within 14 days of the notification provided pursuant to Section 6(B)(4)(d)(v)(c) above, for submission to and review by the Department, describing and documenting correction of the circumstances or conditions that caused the fuel to become non-compliant with the CDD wood fuel standards; and,
 - e. Cease acceptance of fuel from the source(s) if: the report requested pursuant to Section 6(B)(4)(d)(v)(d) above is not submitted to the Department within 14 days of the licensee's notification to the source(s); the report required pursuant to Section 6(B)(4)(v)(d) above is not approved by the Department; or the Department determines after review of the sampling and analytical results and the evaluation required in Section 6(B)(4)(d)(v)(b) above, that continued acceptance of the substandard fuel poses an unreasonable risk to public health or the environment.

(5) Boiler Operation

Facilities burning CDD wood fuel in their boilers shall:

- (a) comply with stack testing requirements as specified by the Bureau of Air Quality; and,
- (b) operate the boiler to meet all applicable emission standards and operate the particulate control device to Best Practical Treatment standards as specified by the Bureau of Air Quality.

NOTE: Facilities burning secondary materials in their boilers must comply with all applicable licensing and operating requirements of the Bureau of Air Quality.

C. Operating Manual. The licensee shall prepare and maintain an operating manual of current policies and procedures related to the beneficial use of the waste as a fuel substitute. The operating manual must include all information that would enable supervisory and operating personnel, and persons evaluating the beneficial use, to determine what sequence of operation, plans, diagrams, policies, procedures and legal requirements must be followed for orderly and successful operation on a daily and yearly basis. The manual must address all items contained in this Section. The licensee shall take whatever measures are necessary to familiarize all personnel responsible for beneficial use with relevant sections of the operating manual.

7. Beneficial Use Licenses. The requirements of this section apply to proposals for beneficial use of secondary materials which do not qualify for licensing under Sections 4, 5, or 6 of this rule.

A. Pre-Application Requirements. A person proposing to license the beneficial use of a secondary material under this section shall request a pre-application meeting with the Department. The pre-application meeting will include a discussion of the beneficial use proposal, and provide an opportunity for the applicant to receive guidance on risk assessment and/or risk management measures that may be required.

At least two weeks prior to the pre-application meeting, the applicant shall submit the following information to the Department.

- (1) A description of the secondary material and its proposed use. This must include sufficient information to demonstrate that the proposed project is a beneficial use.
- (2) Information regarding the physical, chemical and, where appropriate, biological characteristics of the secondary material.
- (3) Results of analytical testing conducted in accordance with the requirements of Chapter 405 section 6(A), (B), and (C). The analytical requirements of Chapter 405, section 6(C) must be modified with Departmental approval to reflect all constituents that may reasonably be thought to be present and which may pose a risk to human health or the environment.
- (4) The quantities, by weight and/or volume of the secondary material.
- (5) A description of any risk management techniques being considered.
- (6) If it is known that a risk assessment is necessary, a description of the proposed protocol for conducting the risk assessment.

- B. Risk Standard.** In addition to the general standards in Section 3 of this rule, the beneficial use of the secondary material must not result in a greater risk than that posed by current construction practices and materials, or in an aggregate risk to a highly exposed individual under the proposed use or all future planned uses exceeding an Incremental Lifetime Cancer Risk of 5×10^{-6} and a Hazard Index of 1/2. Any secondary material which does not contain levels of constituents in excess of the levels listed in Appendix A of this rule is deemed to meet this risk standard for those constituents.
- C. Application Requirements.** The applicant shall submit to the Department, on application forms provided by the Department, the following information:
- (1) If the Department determines during the pre-application review, required for all licenses under this section, that the location of the beneficial use activity must be identified in managing the risks of the proposed activity, a U.S.G.S. 7.5 minute topographic map or smaller scale equivalent map clearly marking the location(s) of the beneficial use activities.
 - (2) If applicable, a copy of the waste characterization plan and a copy of the laboratory results of analyses demonstrating that the secondary material is non-hazardous.
 - (3) If analysis demonstrates that the secondary material contains levels of the constituents in excess of those listed in Appendix A, a demonstration that the proposed beneficial use of the waste does not pose a significant risk to public health or an unreasonable threat to the natural environment. This demonstration may be made through a risk assessment and/or through risk management techniques such as waste treatment, project design or site selection. The risk assessment may include a discussion of the risks and drawbacks, an assessment of similar applications of the waste proposed for beneficial use, and a discussion of the relative risks in comparison with the usual methods of disposal and recycling and/or the usual construction methods and materials used in Maine. Risk assessments must conform to the Department's guidance document, "Guidance Manual for Human Health Risk Assessments", revised 1994.
 - (4) A demonstration that the nature of the proposed use of the waste constitutes a beneficial use as defined in Chapter 400 Section 1(T) and that it meets the general standards for beneficial use under Section 3.
 - (5) If applicable, a brief description of the operation of the facility which is proposing to use the secondary material and the product(s) produced and the manner in which the secondary material will be used. In the case of a manufacturing facility, a general description of the facility's manufacturing system must be submitted, including process flow diagrams. The complexity and degree of detail of the description will vary depending on the magnitude and complexity of the process.
 - (6) A description of how the secondary material will be stored and handled prior to and during its use.
 - (7) If requested by the Department, financial assurance in the form of a letter of credit, escrow account, or other approved financial security to finance the cost of potential remediation or disposal of the secondary material.

- (8) If applicable, a technical comparison of the secondary material and the virgin material it is replacing. An evaluation must demonstrate how that the physical and chemical properties of the materials are comparable and that the secondary material will serve as an acceptable substitute for the analogous raw material, or that the secondary material meets or exceeds the applicable generally accepted product specifications and standards for that product. This demonstration may include a discussion of the risks and drawbacks and an assessment of similar applications of the proposed beneficial use.
- (9) A copy of the information on proper use that will be distributed with the secondary material.

D. Records

- (1) **Deed Notice.** A licensee for the beneficial use of a secondary material used as construction fill shall, when required by license term or condition, prepare and record in the Registry of Deeds or another permanent record approved by the department, the following information:
 - (a) A description of the type and composition of the waste(s) placed as construction fill, and
 - (b) The location, extent, and depth of the waste(s) deposited.
 - (2) **Deed Restriction.** Dependent upon the nature of the risk posed by the secondary material used as construction fill, the Department may require the licensee to prepare and record a deed restriction that prohibits the waste(s) from being uncovered or disturbed in any way without the prior written approval of the Department or other appropriate agency of the State of Maine.
- 8. Annual Report.** For licensed, on-going beneficial use activities, the licensee shall submit, for review and approval, an annual report to the Department. This report must contain a summary of activity during the past year, including the quantity of secondary material distributed or received for beneficial use, the sources of the secondary material received, and the results of any required testing or on-going characterization. Where required by license condition, the licensee is required to include in the annual report the location of the beneficial use activity for the past year.
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FISCAL NOTE: The proposed revisions to the rules will not impose any additional cost on municipalities or counties. The Department also evaluated alternatives to reduce possible economic burdens to small business when drafting the proposed revisions. The revisions being proposed will reduce economic burdens to small businesses through greater accuracy and clarity in the rules.

STATUTORY AUTHORITY: 38 MRSA Sections 341-D(1-B) and 1304 (1,1-B & 13)

EFFECTIVE DATE: November 2, 1998

AMENDED: September 6, 1999

AMENDED: June 16, 2006 – filing 2006-258

AMENDED: February 8, 2012 – filing 2012-13

APPENDIX A

SCREENING STANDARDS FOR BENEFICIAL USE
(mg/kg, dry weight)

No.	Contaminant	CAS	Waste Conc. (Milligrams per Kilogram)
1	Acephate	30560191	912.5
2	Acetochlor	34256821	2000
3	Acetone	67641	20
4	Acetone cyanohydrin	75865	78.75
5	Acetonitrile	75058	587.5
6	Acetophenone	98862	9750
7	Acifluorfen	62476599	1250
8	Acrolein	107028	2000
9	Acrylamide	79061	1.75
10	Acrylic acid	79107	48750
11	Acrylonitrile	107131	15
12	Alachlor	15972608	100
13	Alar	1596845	15000
14	Aldicarb	116063	97.5
15	Aldicarb sulfone	1646884	97.5
16	Aldrin	309002	0.475
17	Allyl	74223646	25000
18	Allyl alcohol	107186	487.5
19	Allyl chloride	107051	4875
20	Aluminum	7429905	97500
21	Aluminum phosphide	20859738	38.75
22	Amdro	67485294	28.75
23	Ametryn	834128	875
24	**Aminodinitrotoluenes	0	5.875
25	m-Aminophenol	591275	6875
26	4-Aminopyridine	504245	2
27	Amitraz	33089611	250
28	Ammonium sulfamate	7773060	20000
29	Aniline	62533	1375
30	Antimony and compounds	7440360	6.25
31	Antimony pentoxide	1314609	48.75
32	Antimony potassium tartrate	304610	87.5
33	Antimony tetroxide	1332316	38.75
34	Antimony trioxide	1309644	38.75
35	Apollo	74115245	1250
36	Aramite	140578	325
37	Arsenic (as carcinogen)	7440382	5.375
38	Assure	76578148	875

39	Asulam	3337711	4875
40	Atrazine	1912249	36.25
41	Avermectin B1	65195553	38.75
42	Azobenzene	103333	72.5
43	Barium and compounds	7440393	2000
44	Baygon	114261	387.5
45	Bayleton	43121433	2875
46	Baythroid	68359375	2500
47	Benefin	1861401	28750
48	Benomyl	17804352	4875
49	Bentazon	25057890	250
50	Benzaldehyde	100527	9750
51	Benzene	71432	0.375
52	Benzenethiol	108985	0.975
53	Benidine	92875	0.035
54	Benzoic acid	65850	500
55	Benzotrachloride	98077	0.6125
56	Benzyl alcohol	100516	28750
57	Benzyl chloride	100447	47.5
58	Beryllium and compounds	7440417	1.875
59	Bidrin	141662	9.75
60	Biphenthrin (Talstar)	82657043	1500
61	1,1-Biphenyl	92524	4875
62	Bis(2-chloroethyl)ether	111444	0.005
63	Bis(2-chloroisopropyl)ether	18601	113.75
64	Bis(chloromethyl)ether	542881	0.03625
65	Bis(2-chloro-1-methylethyl)ether	0	113.75
66	Bis(2-ethylhexyl)phthalate (DEHP)	117817	575
67	Bisphenol A	80057	4875
68	Boron (and borates)	7440428	8750
69	Bromodichloromethane	75274	7.5
70	Bromoform (tribromomethane)	75252	10
71	Bromomethane	74839	137.5
72	4-Bromophenyl phenyl ether	101553	5625
73	Bromophos	2104963	487.5
74	Bromoxynil	1689845	2000
75	Bromoxynil octanoate	1689992	2000
76	1-Butanol	71363	21.25
77	Butyl benzyl phthalate	85687	1162.5
78	Butylate	2008415	4875
79	n-Butylbenzene	104518	975
80	sec-Butylbenzene	135988	975
81	tert-Butylbenzene	98066	975
82	Butylphthalyl butylglycolate	85701	97500
83	Cacodylic acid	75605	287.5
84	Cadmium and compounds	7440439	10

85	Caprolactam	105602	48750
86	Captafol	2425061	925
87	Captan	133062	2250
88	Carbaryl	63252	9750
89	Carbofuran	1563662	487.5
90	Carbon disulfide	75150	40
91	Carbon tetrachloride	56235	0.875
92	Carbosulfan	55285148	975
93	Carboxin	5234684	9750
94	Chloral	75876	200
95	Chloramben	133904	1500
96	Chloranil	118752	20
97	Chlordane	57749	22.5
98	Chlorimuron-ethyl	90982324	2000
99	Chlorine	7782505	9750
100	Chloroacetaldehyde	107200	675
101	Chloroacetic acid	79118	200
102	4-Chloroaniline	106478	0.875
103	Chlorobenzene	108907	1.25
104	Chlorobenzilate	510156	30
105	p-Chlorobenzoic acid	74113	20000
106	4-Chlorobenzotrifluoride	98566	2000
107	2-Chloro-1,3-butadiene (chloroprene)	126998	2000
108	1-Chlorobutane	109693	38750
109	Chlorodibromomethane	124481	5
110	Chloroethane	75003	2750
111	2-Chloroethyl vinyl ether	110758	2500
112	Chloroform	67663	7.5
113	Chloromethane	74873	612.5
114	4-Chloro-2-methylaniline hydrochloride	3165933	17.5
115	4-Chloro-2-methylaniline	95692	13.75
116	beta-Chloronaphthalene	91587	7875
117	o-Chloronitrobenzene	88733	325
118	p-Chloronitrobenzene	100005	437.5
119	2-Chlorophenol	95578	5
120	Chlorothalonil	1897456	725
121	o-Chlorotoluene	95498	2000
122	Chlorpropham	101213	20000
123	Chlorpyrifos	2921882	287.5
124	Chlorpyrifos-methyl	5598130	975
125	Chlorsulfuron	64902723	4875
126	Chlorthiophos	60238564	78.75
127	Chromium III and compounds	16065831	97500
128	Chromium VI and compounds	18540299	47.5
129	Cobalt	7440484	5875
130	Copper and compounds	7440508	1500

131	Crotonaldehyde	123739	4.25
132	Cumene	98828	9750
133	Cyanides:	N/A	9.5N/A
134	Barium cyanide	542621	50
135	Calcium cyanide	592018	50
136	Chlorine cyanide	506774	50
137	Copper cyanide	544923	487.5
138	Cyanazine	21725462	9.5
139	Cyanogen	460195	3875
140	Cyanogen bromide	506683	8750
141	Cyanogen chloride	506774	4875
142	Free cyanide	57125	2000
143	Hydrogen cyanide	74908	2000
144	Potassium cyanide	151508	4875
145	Potassium silver cyanide	506616	20000
146	Silver cyanide	506649	9750
147	Sodium cyanide	143339	3875
148	Thiocyanate	0	9750
149	Zinc cyanide	557211	4875
150	Cyclohexanone	108941	487500
151	Cyclohexamine	108918	20000
152	Cyhalothrin/Karate	68085858	487.5
153	Cypermethrin	52315078	975
154	Cyromazine	66215278	737.5
155	Dacthal	1861321	975
156	Dalapon	75990	2875
157	Danitol	39515418	2500
158	DDD	72548	33.75
159	DDE	72559	23.75
160	DDT	50293	23.75
161	Decabromodiphenyl ether	1163195	975
162	Demeton	8065483	3.875
163	Diallate	2303164	125
164	Diazinon	333415	87.5
165	Dibenzofuran	132649	387.5
166	1,4-Dibromobenzene	106376	975
167	1,2-Dibromo-3-chloropropane	96128	5.75
168	1,2-Dibromoethane	106934	0.09375
169	Dibutyl phthalate	84742	9750
170	Dicamba	1918009	2875
171	1,2-Dichlorobenzene	95501	21.25
172	1,3-Dichlorobenzene	541731	8750
173	1,4-Dichlorobenzene	106467	25
174	3,3'-Dichlorobenzidine	91941	0.0875
175	Dichlorodifluoromethane	75718	20000
176	1,1-Dichloroethane	75343	28.75

177	1,2-Dichloroethane (EDC)	107062	0.25
178	1,1-Dichloroethylene	75354	0.75
179	1,2-Dichloroethylene (cis)	156592	0.5
180	1,2-Dichloroethylene (trans)	156605	0.875
181	1,2-Dichloroethylene (mixture)	540590	875
182	2,4-Dichlorophenol	120832	1.25
183	2,4-Dichlorophenoxyacetic Acid (2,4-D)	94757	975
184	4-(2,4-Dichlorophenoxy)butyric Acid	94826	787.5
185	1,2-Dichloropropane	78875	0.375
186	2,3-Dichloropropanol	616239	287.5
187	1,3-Dichloropropene	542756	0.05
188	Dichlorvos	62737	27.5
189	Dicofol	115322	18.75
190	Dicyclopentadiene	77736	2875
191	Dieldrin	60571	0.05
192	Diethyl phthalate	84662	587.5
193	Diethylene glycol, monoethyl ether	111900	200000
194	Diethylformamide	617845	1075
195	Di(2-ethylhexyl)adipate	103231	6625
196	Diethylstilbestrol	56531	0.00175
197	Difenzoquat (Avenge)	43222486	7875
198	Diflubenzuron	35367385	2000
199	Diisopropyl methylphosphonate (DIMP)	1445756	7875
200	Dimethipin	55290647	2000
201	Dimethoate	60515	20
202	3,3'-Dimethoxybenzidine	119904	575
203	2,4-Dimethylaniline hydrochloride	21436964	13.75
204	2,4-Dimethylaniline	95681	10.625
205	N-N-Dimethylaniline	121697	200
206	3,3'-Dimethylbenzidine	119937	0.8625
207	N,N-Dimethylformamide	68122	9750
208	1,1-Dimethylhydrazine	57147	3.125
209	1,2-Dimethylhydrazine	540738	0.2125
210	2,4-Dimethylphenol	105679	11.25
211	2,6-Dimethylphenol	576261	58.75
212	3,4-Dimethylphenol	95658	97.5
213	Dimethyl phthalate	131113	975000
214	Dimethyl terephthalate	120616	9750
215	1,2-Dinitrobenzene	528290	38.75
216	1,3-Dinitrobenzene	99650	9.75
217	1,4-Dinitrobenzene	100254	38.75
218	4,6-Dinitro-o-cyclohexyl phenol	131895	200
219	4,6-Dinitro-2-methylphenol	534521	9.75
220	2,4-Dinitrophenol	51285	0.375
221	Dinitrotoluene mixture	0	11.75
222	2,4-Dinitrotoluene	121142	0.001

223	2,6-Dinitrotoluene	606202	0.000875
224	Dinoseb	88857	97.5
225	di-n-Octyl phthalate	117840	2000
226	1,4-Dioxane	123911	725
227	Diphenamid	957517	2875
228	Diphenylamine	122394	2500
229	1,2-Diphenylhydrazine	122667	10
230	Diquat	85007	212.5
231	Direct black 38	1937377	0.925
232	Direct blue 6	2602462	0.9875
233	Direct brown 95	16071866	0.8625
234	Disulfoton	298044	3.875
235	1,4-Dithiane	505293	975
236	Diuron	330541	200
237	Dodine	2439103	387.5
238	Endosulfan	115297	22.5
239	Endothall	145733	2000
240	Endrin	72208	1.25
241	Epichlorohydrin	106898	812.5
242	Ethephon (2-chloroethyl phosphonic acid)	16672870	487.5
243	Ethion	563122	48.75
244	2-Ethoxyethanol acetate	111159	28750
245	2-Ethoxyethanol	110805	38750
246	Ethyl acrylate	140885	162.5
247	EPTC (S-Ethyl dipropylthiocarbamate)	759944	2500
248	Ethyl acetate	141786	87500
249	Ethylbenzene	100414	16.25
250	Ethylene cyanohydrin	109784	28750
251	Ethylene diamine	107153	2000
252	Ethylene glycol	107211	200000
253	Ethylene oxide	75218	7.875
254	Ethylene thiourea (ETU)	96457	67.5
255	Ethyl ether	60297	20000
256	Ethyl methacrylate	97632	8750
257	Ethyl p-nitrophenyl phenylphosphorothioate	2104645	0.975
258	Ethylphthalyl ethyl glycolate	84720	287500
259	Express	10120	787.5
260	Fenamiphos	22224926	25
261	Fluometuron	2164172	1250
262	Fluoride	7782414	5875
263	Fluoridone	59756604	7875
264	Flurprimidol	56425913	2000
265	Flutolanil	66332965	5875
266	Fluvalinate	69409945	975
267	Folpet	133073	2250

268	Fomesafen	72178020	42.5
269	Fonofos	944229	200
270	Formaldehyde	50000	20000
271	Formic Acid	64186	200000
272	Fosetyl-al	39148248	287500
273	Furan	110009	97.5
274	Furazolidone	67458	2.125
275	Furfural	98011	287.5
276	Furium	531828	0.1625
277	Furmecyclox	60568050	262.5
278	Glufosinate-ammonium	77182822	38.75
279	Glycidaldehyde	765344	38.75
280	Glyphosate	1071836	9750
281	Haloxypop-methyl	69806402	4.875
282	Harmony	79277273	1250
283	HCH (alpha)	319846	1.25
284	HCH (beta)	319857	4.375
285	HCH (gamma) Lindane	58899	6.125
286	HCH-technical	608731	4.375
287	Heptachlor	76448	1.75
288	Heptachlor epoxide	1024573	0.875
289	Hexabromobenzene	87821	200
290	Hexachlorobenzene	118741	5
291	Hexachlorobutadiene	87683	25
292	Hexachlorocyclopentadiene	77474	500
293	Hexachlorodibenzo-p-dioxin mixture	19408743	0.00125
294	Hexachloroethane	67721	6.25
295	Hexachlorophene	70304	28.75
296	Hexahydro-1,3,5-trinitro-1,3,5-triazine	121824	72.5
297	n-Hexane	110543	5875
298	2-Hexanone	73663715	3875
299	Hexazinone	51235042	3250
300	Hydrazine, hydrazine sulfate	302012	2.625
301	Hydrogen sulfide	7783064	287.5
302	Hydroquinone	123319	3875
303	Imazalil	35554440	1250
304	Imazaquin	81335377	25000
305	Iprodione	36734197	3875
306	Iron	7439896	28750
307	Isobutanol	78831	28750
308	Isophorone	78591	6.25
309	Isopropalin	33820530	1500
310	Isopropyl methyl phosphonic acid	1832548	9750
311	Isoxaben	82558507	4875
312	Kepone	143500	0.4375
313	Lactofen	77501634	200

314	Lead	7439921	375
315	Linuron	330552	200
316	Lithium	7439932	2000
317	Londax	83056996	20000
318	Malathion	121755	2000
319	Maleic anhydride	108316	9750
320	Maleic hydrazide	123331	48750
321	Malononitrile	109773	2
322	Mancozeb	8018017	2875
323	Maneb	12427382	487.5
324	Manganese and compounds	7439965	2250
325	Mephosfolan	950107	8.75
326	Mepiquat chloride	24307264	2875
327	Mercuric chloride	7487947	28.75
328	Mercury (inorganic)	7439976	1.2
329	Mercury (methyl)	22967926	1.2
330	Merphos	150505	2.875
331	Merphos oxide	78488	2.875
332	Metalaxyl	57837191	5875
333	Methacrylonitrile	126987	9.75
334	Methamidophos	10265926	4.875
335	Methanol	67561	48750
336	Methidathion	950378	97.5
337	Methomyl	16752775	2500
338	Methoxychlor	72435	200
339	2-Methoxyethanol acetate	110496	200
340	2-Methoxyethanol	109864	97.5
341	2-Methoxy-5-nitroaniline	99592	175
342	Methyl acetate	79209	97500
343	Methyl acrylate	96333	2875
344	2-Methylaniline hydrochloride	636215	43.75
345	2-Methylaniline	95534	33.75
346	Methyl chlorocarbonate	79221	97500
347	4-(2-Methyl-4-chlorophenoxy) butyric acid	94815	975
348	2-Methyl-4-chlorophenoxyacetic acid	94746	48.75
349	2-(2-Methyl-4-chlorophenoxy)propionic acid	93652	97.5
350	Methylene bromide	74953	0.25
351	Methylene chloride	75092	0.25
352	4,4'-Methylene bis(2-chloroaniline)	101144	61.25
353	4,4'-Methylenebisbenzeneamine	101779	32.5
354	4,4'-Methylene bis(N,N'-dimethyl)aniline	101611	175
355	Methyl ethyl ketone	78933	58750
356	Methyl hydrazine	60344	7.25
357	Methyl isobutyl ketone	108101	7875

358	Methyl methacrylate	80626	7875
359	2-Methyl-5-nitroaniline	99558	237.5
360	Methyl parathion	298000	25
361	2-Methylphenol (o-cresol)	95487	18.75
362	3-Methylphenol (m-cresol)	108394	4875
363	4-Methylphenol (p-cresol)	106445	487.5
364	Methyl styrene (mixture)	25013154	587.5
365	Methyl styrene (alpha)	98839	6875
366	Methyl tertbutyl ether (MTBE)	1634044	487.5
367	Metolaclo (Dual)	51218452	15000
368	Metribuzin	21087649	2500
369	Mirex	2385855	4.375
370	Molinate	2212671	200
371	Molybdenum	7439987	487.5
372	Monochloramine	10599903	9750
373	Naled	300765	200
374	2-Naphthylamine	91598	0.06125
375	Napropamide	15299997	9750
376	Nickel refinery dust	0	162.5
377	Nickel and compounds	7440020	162.5
378	Nitrapyrin	1929824	150
379	Nitrate	14797558	162500
380	Nitric oxide	10102439	9750
381	Nitrite	14797650	9750
382	2-Nitroaniline	88744	5.875
383	3-Nitroaniline	99092	287.5
384	4-Nitroaniline	100016	287.5
385	Nitrobenzene	98953	0.125
386	Nitrofurantoin	67209	6875
387	Nitrofurazone	59870	5.375
388	Nitrogen dioxide	10102440	97500
389	4-Nitrophenol	100027	787.5
390	N-Nitrosodi-n-butylamine	924163	1.5
391	N-Nitrosodiethanolamine	1116547	2.875
392	N-Nitrosodiethylamine	55185	0.05375
393	N-Nitrosodimethylamine	62759	0.1625
394	N-Nitrosodiphenylamine	86306	12.5
395	N-Nitroso di-n-propylamine	621647	1.1375
396	N-Nitroso-N-ethylurea	759739	0.0575
397	N-Nitroso-N-methylethylamine	10595956	0.3625
398	N-Nitrosopyrrolidine	930552	3.75
399	m-Nitrotoluene	99081	2000
400	o-Nitrotoluene	88722	975
401	p-Nitrotoluene	99990	975
402	Norflurazon	27314132	3875
403	NuStar	85509199	68.75

404	Octabromodiphenyl ether	32536520	287.5
405	Octahydro-1357-tetranitro-1357-tetrazocine	2691410	4875
406	Octamethylpyrophosphoramidate	152169	200
407	Oryzalin	19044883	4875
408	Oxadiazon	19666309	487.5
409	Oxamyl	23135220	2500
410	Oxyfluorfen	42874033	287.5
411	Paclobutrazol	76738620	1250
412	Paraquat	4685147	437.5
413	Parathion	56382	587.5
414	Pebulate	1114712	4875
415	Pendimethalin	40487421	3875
416	Pentabromo-6-chlorocyclohexane	87843	350
417	Pentabromodiphenyl ether	32534819	200
418	Pentachlorobenzene	608935	78.75
419	Pentachloronitrobenzene	82688	31.25
420	Pentachlorophenol	87865	0.375
421	Permethrin	52645531	4875
422	Phenmedipham	13684634	25000
423	Phenol	108952	125
424	m-Phenylenediamine	108452	587.5
425	o-Phenylenediamine	95545	175
426	p-Phenylenediamine	106503	18750
427	Phenylmercuric acetate	62384	7.875
428	2-Phenylphenol	90437	4125
429	Phorate	298022	20
430	Phosmet	732116	2000
431	Phosphine	7803512	28.75
432	Phosphorus (white)	7723140	2
433	p-Phthalic acid	100210	97500
434	Phthalic anhydride	85449	200000
435	Picloram	1918021	6875
436	Pirimiphos-methyl	29232937	975
437	Polybrominated biphenyls	0	0.9
438	Polychlorinated biphenyls (PCBs)	1336363	4
439	Aroclor 1016	12674112	6.875
440	Aroclor 1254	11097691	2
441	Polychlorinated terphenyls (PCTs)	61788338	1.75
442	Polynuclear aromatic hydrocarbons	N/A	N/A
443	Acenaphthene	83329	712.5
444	Anthracene	120127	15000
445	Benz[a]anthracene	56553	11
446	Benzo[b]fluoranthene	205992	11
447	Benzo[k]fluoranthene	207089	110
448	Benzo[a]pyrene	50328	1.1

449	Carbazole	86748	7.5
450	Chrysene	218019	1100
451	Dibenz[ah]anthracene	53703	1.1
452	Fluoranthene	206440	3875
453	Fluorene	86737	3875
454	Indeno[1,2,3-cd]pyrene	193395	11
455	2-Methylnaphthalene	91576	3875
456	Naphthalene	91203	105
457	Pyrene	129000	2875
458	Prochloraz	67747095	53.75
459	Profluralin	26399360	587.5
460	Prometon	1610180	1500
461	Prometryn	7287196	387.5
462	Pronamide	23950585	7375
463	Propachlor	1918167	1250
464	Propanil	709988	487.5
465	Propargite	2312358	2000
466	Propargyl alcohol	107197	200
467	Propazine	139402	2000
468	Propham	122429	2000
469	Propiconazole	60207901	1250
470	n-Propylbenzene	103651	975
471	Propylene glycol	57556	1000000
472	Propylene glycol, monoethyl ether	52125538	68750
473	Propylene glycol, monomethyl ether	107982	68750
474	Propylene oxide	75569	33.75
475	Pursuit	81335775	25000
476	Pydrin	51630581	2500
477	Pyridine	110861	97.5
478	Quinalphos	13593038	48.75
479	Quinoline	91225	0.6625
480	Resmethrin	10453868	2875
481	Ronnel	299843	4875
482	Rotenone	83794	387.5
483	Savey	78587050	2500
484	Selenious Acid	7783008	487.5
485	Selenium	7782492	6.25
486	Selenourea	630104	487.5
487	Sethoxydim	74051802	8750
488	Silver and compounds	7440224	42.5
489	Simazine	122349	66.25
490	Sodium azide	26628228	387.5
491	Sodium diethyldithiocarbamate	148185	30
492	Sodium fluoroacetate	62748	2
493	Sodium metavanadate	13718268	97.5
494	Strontium, stable	7440246	58750

495	Strychnine	57249	28.75
496	Styrene	100425	5
497	Systhane	88671890	2500
498	2,3,7,8-TCDD (dioxin TEQ)	1746016	.0000039
499	Tebuthiuron	34014181	6875
500	Temephos	3383968	2000
501	Terbacil	5902512	1250
502	Terbufos	13071799	2.5
503	Terbutryn	886500	97.5
504	1,2,4,5-Tetrachlorobenzene	95943	28.75
505	1,1,1,2-Tetrachloroethane	630206	312.5
506	1,1,2,2-Tetrachloroethane	79345	0.0375
507	Tetrachloroethylene (PCE)	127184	0.75
508	2,3,4,6-Tetrachlorophenol	58902	2875
509	p,a,a,a-Tetrachlorotoluene	5216251	0.4
510	Tetrachlorovinphos	961115	337.5
511	Tetraethyldithiopyrophosphate	3689245	48.75
512	Tetraethyl lead	78002	0.00975
513	Thallic oxide	1314325	6.875
514	Thallium	0	7.875
515	Thallium acetate	563688	8.75
516	Thallium carbonate	6533739	7.875
517	Thallium chloride	7791120	7.875
518	Thallium nitrate	10102451	8.75
519	Thiobencarb	28249776	975
520	2-(Thiocyanomethylthio)-benzothiazole	21564170	2875
521	Thiofanox	39196184	28.75
522	Thiophanate-methyl	23564058	7875
523	Thiram	137268	487.5
524	Tin and compounds	0	58750
525	Titanium	7440326	387500
526	Titanium dioxide	13643677	387500
527	Toluene	108883	15
528	Toluene-2,4-diamine	95807	2.5
529	Toluene-2,5-diamine	95705	58750
530	Toluene-2,6-diamine	823405	20000
531	p-Toluidine	106490	42.5
532	Toxaphene	8001352	7.25
533	Tralomethrin	66841256	737.5
534	Triallate	2303175	1250
535	Triasulfuron	82097505	975
536	1,2,4-Tribromobenzene	615543	487.5
537	Tributyltin oxide (TBTO)	56359	28.75
538	2,4,6-Trichloroaniline hydrochloride	33663502	275
539	2,4,6-Trichloroaniline	634935	237.5
540	1,2,4-Trichlorobenzene	120821	6.25

541	1,1,1-Trichloroethane	71556	2.5
542	1,1,2-Trichloroethane	79005	0.25
543	Trichloroethylene (TCE)	79016	0.75
544	Trichlorofluoromethane	75694	28750
545	2,4,5-Trichlorophenol	95954	337.5
546	2,4,6-Trichlorophenol	88062	2.5
547	2,4,5-Trichlorophenoxyacetic acid	93765	975
548	2-(2,4,5-Trichlorophenoxy)propionic acid	93721	787.5
549	1,1,2-Trichloropropane	598776	487.5
550	1,2,3-Trichloropropane	96184	1.1375
551	1,2,3-Trichloropropene	96195	487.5
552	1,1,2-Trichloro-1,2,2- trifluoroethane	76131	1000000
553	Tridiphane	58138082	287.5
554	Trifluralin	1582098	1037.5
555	1,2,4-Trimethylbenzene	95636	4875
556	1,3,5-Trimethylbenzene	108678	4875
557	Trimethyl phosphate	512561	212.5
558	1,3,5-Trinitrobenzene	99354	2875
559	Trinitrophenylmethylnitramine	479458	975
560	2,4,6-Trinitrotoluene	118967	262.5
561	Uranium (soluble salts)	7440611	287.5
562	Vanadium	7440622	687.5
563	Vanadium pentoxide	1314621	875
564	Vanadium sulfate	36907423	2000
565	Vernam	1929777	97.5
566	Vinclozolin	50471448	2500
567	Vinyl acetate	108054	212.5
568	Vinyl chloride	75014	0.125
569	Warfarin	81812	28.75
570	m-Xylene	108323	262.5
571	o-Xylene	95476	237.5
572	Xylene (mixed)	1330207	262.5
573	Zinc	7440666	2800
574	Zinc phosphide	1314847	28.75
575	Zineb	12122677	4875