

INDUSTRIAL SOLID WASTE MANAGEMENT PLAN

Dem-Con Pilgrim Landfill (SW-254)
Mankato, Minnesota

Dem-Con Companies
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Version 1

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1.0 INTRODUCTION

The “Industrial Solid Waste Management Plan” (ISWMP) for the Dem-Con Pilgrim Landfill (SW-254) was prepared to provide the specific details and procedures for the management of industrial wastes at the facility. The ISWMP was developed according to Minnesota Solid Waste Rules Part 7035.2535, subpart 5. The ISWMP discusses specific industrial waste types that will or will not be accepted at the facility, and procedures to evaluate new waste types for acceptance. It is therefore expected that the plan be revised from time to time in accordance with changes in waste stream characteristics and the evolution of the industrial waste market.

Background

Dem-Con Pilgrim Landfill, LLC (Dem-Con) operates a demolition landfill located in Township 109 North, Range 26 West, Sections 30 and 31 in Lime Township of Blue Earth, Minnesota. The initial portion of the landfill is unlined. The permit was modified in 2026 to include a lined Class III demolition landfill area, as defined in the “Demolition Landfill Guidance (MPCA, 2005), and, as stated on page 3 of that document, can accept construction, demolition (C&D) and non-hazardous industrial wastes.

Amendments to the Industrial Solid Waste Management Plan

The ISWMP may be amended at any time during the life of the facility. An amended ISWMP will be submitted whenever changes in operation or design affect the ISWMP procedures. The MPCA must review and approve the amended ISWMP prior to implementation.

2.0 ACCEPTABLE AND UNACCEPTABLE WASTES

Acceptable Wastes

Dem-Con is permitted for landfilling in two areas. The eastern, unlined area (DD 001) is permitted as a Class I demolition landfill, and the western, lined area (DD 002) is permitted as a Class III demolition landfill by the MPCA. The following sections list types of wastes that are acceptable in each area.

2.1.1 Unlined Areas

Waste types accepted in the unlined area are limited to the following demolition debris types:

- Bituminous concrete (includes asphalt pavement and blacktop)
- Concrete (including rerod)
- Stone
- Uncontaminated soil
- Masonry (bricks, stucco and plaster)
- Untreated wood (including painted, stained and/or varnished dimensional lumber, pallets, tree stumps, grubbing, root balls, particle board, plywood, fencing and dock materials)
- Siding (Includes vinyl, masonite, untreated wood, aluminum and steel.)
- Wall coverings
- Electrical wiring and components
- Roofing materials
- Duct work
- Wall board, sheet rock
- Built-in cabinetry
- Plumbing fixtures
- Affixed carpet and padding
- Ceramic items
- Conduit and pipes
- Glass (limited to window and door glass from buildings and structures)
- Insulation (Includes fiberglass, mineral wool, cellulose, polystyrene and newspaper.)
- Plastic building parts
- Sheathing
- Molded fiberglass

- Rubber
- Drain tile
- Recognizable portions of burned structures
- Metal
- Ceiling tile
- Wood and vinyl flooring
- Asbestos-containing materials (pursuant to Appendix A of this ISWMP)

2.1.2 Lined Areas

In the lined areas, Dem-Con can accept:

- All wastes accepted in the unlined areas (no further evaluation needed);
- Packaging from construction materials and activities (no further evaluation needed);
- Empty containers from construction and demolition activities (no further evaluation needed);
- Empty containers managed in accordance with MPCA “Managing Empty Containers” document (no further evaluation needed);
- Emergency Disaster Debris
- Depackaging waste
- Treated lumber (no further evaluation needed);
- Railroad ties (no further evaluation needed);
- Contaminated soils (evaluate as per Table 1);
- Dredged Materials (evaluate as per Appendix B);
- Foundry sands (evaluate as per Table 1);
- Sandblasting sands (evaluate as per Table 1);
- Grinding sludges (evaluate as per Table 1);
- Car wash sand sediment (no further evaluation needed);
- Non-hazardous mercury contaminated soils and construction/demolition debris free of elemental mercury (evaluate as per Appendix B and Table 1, respectively);
- Wastes containing PCB’s less than 50 ppm
- Demolition debris with PCB containing caulking wastes in excess of 50 ppm that are adhered to structure;
- Demolition debris with lead paint that is adhered to the structure;
- Ash from burnt structures (evaluate as per Table 1);

- Non-PCB ballasts (no further evaluation needed);
- Naturally Occurring Radioactive Material (NORM) with radium-226 not exceeding 30 Pico curries;
- Carpet – abated (no further evaluation needed);
- Street sweepings (no further evaluation needed);
- Absorbents (evaluate as per Table 1);
- Waste traps from garages (evaluate as per Table 1);
- Sanitary & Storm Sewer Grit (evaluate as per Table 1);
- Wastewater treatment residues (evaluate as per Table 1 and MPCA Guidance Document “Guidelines-Disposal Methods for Water Filter Backwash Solids”);
- Autoclaved medical waste;
- Residue from single sort recycling, tire recycling, auto recycling, and other recycling operations;
- Other wastes from manufacturing and industrial processes that do not exceed the maximum concentrations of the toxicity characteristics for a given waste using the regulatory levels included in 40 CFR part 261 (see Section 2.3 and Table 1);
- Shredded demolition debris that can be identified and or verified from generator as acceptable materials;
- Fiberglass structures (boat hulls, hot tubs, etc.)
- Treated seeds, managed in accordance with Appendix K
- “Demo-like” materials from manufacturers of building materials and structural components of buildings (including cabinets, doors, prefabricated walls, countertops, carpet, shingles, etc.), including, but not limited to, wood, wood products, tree stumps, asbestos, glass, concrete, metal, brick, clay, porcelain fixtures, block, tile, rock, insulation, shingles, sheet rock, styrofoam, plastic pipe, conduit, fiberboard, plaster and dirt;
- Residuals from yardwaste compost screening operations; and
- Other waste types specifically listed in this ISWMP.

2.2 Unacceptable Wastes

MPCA rules prohibit certain wastes from disposal in C&D landfills, including:

- Municipal Solid Waste (MSW)
- Hazardous wastes;
- Sewage that does not meet Class B pathogen reduction listed in part 7041.1300 subpart 3 such as, sewage sludge, septic tank pumping, sewage sludge compost;
- Wastes containing free liquids;

- Raw animal manure;
- Infectious wastes;
- Used oil;
- Radioactive wastes;
- Animal carcasses, parts, renderings and slaughterhouse wastes;
- Appliances (for disposal);
- Hot ashes or wastes that could spontaneously combust or ignite other wastes due to high temperatures;
- Batteries;
- Recyclable cardboard;
- Explosives;
- Fluorescent tubes and ballasts containing PCB's;
- Food waste;
- Mattresses;
- High-intensity discharge lamps;
- Live coal tar (including applicators, containers, and tubes);
- Household hazardous waste;
- Machinery or engine parts;
- Medical waste (non-autoclaved);
- Wastes containing elemental or free mercury (thermostats, switches);
- MSW incinerator ash;
- PCB containing wastes greater than the regulatory limit of 50 ppm;
- Tires (for disposal);
- Unrecognizable waste, unless processed at an MPCA permitted solid waste facility prior to delivery;
- Vehicles; and
- Yard waste (for disposal).

2.3 Mandatory Waste Types

Minnesota Rules part 7035.2535, subpart 5, item B requires that the following 12 specific waste types be addressed in an ISWMP:

Waste Type	Accepted/Not Accepted		Disposal Method
	Unlined Area	Lined Area	
Empty pesticide containers	Not accepted	Accepted	Codisposal
Asbestos	Category 1 & 2 non-friable only	Accepted (all forms)	See Appendix A
Waste containing (PCBs) at a concentration less than 50 ppm	Not accepted	Accepted	See Table 1
Spilled non-hazardous materials	Not accepted	Accepted	See Table 1
Rendering and slaughterhouse wastes	Not accepted	Not Accepted	
Wastes that could spontaneously combust or that could ignite other wastes because of high temperatures	Not accepted	Not accepted	
Foundry wastes	Not accepted	Accepted	See Table 1
Ash from incinerators, resource recovery facilities and power plants	Not accepted	Accepted	See Table 1 (coal ash only accepted in cells with a Subtitle D -equivalent liner)
Paint residues, paint filters and paint dust	Not accepted	Accepted	See Table 1
Sludges, including ink sludges, lime sludge, wood sludge and paper sludge	Not accepted	Accepted	See Table 1
Fiberglass, urethane, polyurethane, and epoxy resin waste	Accepted	Accepted	See Table 1
Spend activated carbon filters	Not accepted	Accepted	See Table 1

2.4 Exempted Waste Types

Minnesota Rules part 7035.2535, subpart 5, item D exempts the following from evaluation in the ISWMP (although whether or not the waste type is accepted must be noted):

Waste Type	Accepted/Not Accepted		Notes
	Unlined Area	Lined Area	
Paper and cardboard wastes from manufacturing processes or packaging	Not accepted	Accepted	
Food and beverage packaging and handling materials	Not accepted	Accepted	Includes packaging, wrapping and food handling (i.e. tissue wrap, etc.) materials not containing organic food waste

Food not containing free liquids	Not accepted	Not accepted	
Aluminum, iron, steel, glass, wood, and hardened, cured plastic waste	Accepted	Accepted	
Dewatered sewage sludge that has been treated by a process to significantly reduce pathogens pursuant to Minnesota Rules	Not accepted	Accepted	Needs to meet the class B pathogen reduction listed in part 7041.1300 subpart 3
Compost including sewage sludge compost produced in accordance with Minnesota Rules, part 7035.2836	Not accepted	Accepted*	*Only Class II compost. Limited, if any, markets exist for Class II compost
Grit and bar screenings from a wastewater treatment plant	Not accepted	Accepted	
Ash from boilers and incinerators using wood or biomass as a fuel source	Not accepted	Accepted	See Table 1

2.5 Waste That Requires a Subtitle D Liner

- Coal Ash and Auto Shredder Residue both require a Subtitle D liner for management in Minnesota. Dem-Con's liner and cap design meet the requirements of subtitle D. A copy of the liner equivalency calculations by Carlson McCain that demonstrate that the liner and cap design exceeds the Subtitle D standard are included in Appendix F.

2.6 Hazardous Wastes

The following discussion is provided to assist facility managers in understanding what is and is not a hazardous waste. The definitions were originally specified in the Resource Conservation and Recovery Act (RCRA), as administered by the United States Environmental Protection Agency (USEPA). These definitions are incorporated into Minnesota state statutes and discussed in detail in rules promulgated by the Minnesota Pollution Control Agency (MPCA), as cited below.

A substance is a hazardous waste if:

- The waste exhibits any of the characteristics of hazardous waste in Minnesota Rules, part 7045.0131 (ignitability, it is an oxidizer, corrosivity, reactivity, lethality or toxicity);
- The waste is nonspecific source (F), specific source (K), commercial chemical product (P,U), listed in Minnesota Rules, part 7045.0135; or
- The waste is a polychlorinated biphenyl waste (PCB waste) at a concentration of 50 ppm or greater as described in Minnesota Rules, part 7045.0135 subpart 5.

The characteristics of a hazardous waste are:

- **Ignitability:** According to MN Rule 7045.0131 Subp 2, a liquid exhibits the characteristic of ignitability if it is an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60 degrees Celsius (140 degrees Fahrenheit). The flash point test determines the lowest temperature at which a chemical ignites when exposed to flame. A non-liquid waste exhibits the characteristic of ignitability if it is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard. Test method 1030 from SW-846 is the most appropriate test for a non-liquid waste for which the ignitability characteristic is suspected.
- **Corrosivity:** A waste exhibits the characteristic of corrosivity if a representative sample of the waste is aqueous and has a pH less than or equal to 2.0 or greater than or equal to 12.5. The pH is a measurement that determines the acidity or alkalinity of a sample.
- **Oxidizers:** Any waste defined in the Code of Federal Regulations (CFR), Title 49, Section 173.115 as an oxidizer or any waste that readily supplies oxygen to a reaction in the absence of air.
- **Reactivity:** A waste is reactive if it is normally unstable; reacts violently with water; forms an explosive or toxic mixture with water; can easily be detonated or exploded; or contains quantities of cyanide gas or sulfide that could be released into the air at toxic levels when exposed to a pH range of 2.0 to 12.5;.
- **Lethality:** Lethality is a hazardous waste characteristic specific to Minnesota, and considers the toxicological, or poisonous, effects of the waste. In accordance with MN Rule 7045.0131, Subp 6, Lethality shall be determined by applying knowledge of materials and processes used, including reasonably available information on the lethality of the components of the waste. A waste is hazardous for the lethality characteristic when a representative sample exhibits any of the following:
 - an oral LD50 (rat) less than 500 mg/kg
 - a dermal LD50 (rabbit) less than 1000 mg/kg
 - an inhalation LC50 (rat) less than 2000 mg/m³
 - an inhalation LC50 (rat) less than 1000 ppm for gasses and vapors
- **Toxicity:** The Toxicity Characteristic Leaching Procedure (TCLP) is a laboratory test where the concentrations of various constituents such as heavy metals, pesticides, and organic solvents are measured in an acid solution that has passed through a sample of the waste material. If the concentration of any constituents exceeds the maximum concentrations listed in MN Rule 7045.0131, Subp 8, the waste is hazardous.

There are exemptions to the hazardous waste classification for specific wastes, as listed in Minnesota Rules, part 7045.0120. Regulated hazardous waste must be disposed of at a permitted hazardous waste

disposal facility. Any material contaminated by a hazardous waste and is deemed to be a hazardous waste by the MPCA will not be managed by Dem-Con.

Dem-Con does not accept hazardous wastes, including household hazardous wastes and hazardous wastes from conditionally exempt generators. Anyone bringing in hazardous wastes for disposal will be directed to the Blue Earth County Household Hazardous Waste Facility, 651 Summit Ave, Mankato, Minnesota, or to contact their county solid waste officer.

3.0 WASTE EVALUATION PROCEDURES

3.1 Notification

Regular customers of the landfill receive notification of the types of materials that are and are not acceptable and any changes in policy. They are also informed of the policies for ensuring that only acceptable waste are hauled to and disposed of at the site.

New customers are notified of Dem-Con's policies and procedures as the new account is opened and/or via postings in the gatehouse or on the company website. Any changes to the original policy will be presented to the generator in the form of a notification letter as appropriate.

3.2 Evaluation of New Industrial Wastes

Dem-Con will evaluate each new waste type considered for disposal on a case-by-case basis. Procedures for evaluating certain specific waste types are included in Table 1 and the appendices. When a request for acceptance for a new waste type is received, Dem-Con will determine the acceptability using the following procedures, as necessary:

- Determine if the waste is construction, demolition or "demo-like" waste that can be accepted without further chemical evaluation. Acceptance of these wastes will be based on physical characteristics such as moisture, odor, dust and other potential nuisance conditions to ensure we are in compliance with our approved MPCA permit for the Facility.
- Request that a waste profile sheet be completed if applicable (See example in Appendix D)
- Determine if the waste is listed as an accepted exempt waste (Section 2.4) that can be accepted without further evaluation. Acceptance of these wastes will be based on physical characteristics such as moisture, odor, dust and other potential nuisance conditions to ensure we are in compliance with our approved MPCA permit for the Facility.
- Determine if the waste is addressed in the Table 1 as an acceptable type. Follow the evaluation procedures listed as appropriate.
- If the waste is a new waste type not covered in the above three categories, request information on the chemical makeup of the waste from the generator. Material Safety Data Sheets (MSDS's) and other product data should be obtained from the generator whenever possible. If waste contains any of the chemical parameters listed in Table 2, chemical analysis should be requested, which can be limited to the specific parameters in the waste. The TCLP test is the most definitive test and should be conducted if there is no data available or if the available data is from a different method and cannot be interpreted as being below the acceptance limits in Table 2. If the results of the chemical analysis are below the acceptance limits, the waste can be accepted for disposal pending a review of the physical characteristics.
- Concurrently with the request for chemical information, request information on the physical characteristics of the waste. Information on quantity, delivery method and frequency, physical state (dry, powder, solid, etc.), odor, flammability of the waste, and on the process that

produces it, should be considered. Determine if the waste can be safely managed and if special management procedures are needed.

- The final determination on acceptability of the waste will be based on comparisons with the acceptance limits (Table 2) and any potential concerns with the physical characteristics.

The need for laboratory testing will be determined on a case-by-case basis. Only the tests needed to accurately characterize the waste will be requested. Unknown waste or waste generated from an unknown process will be required to have complete TCLP analysis.

After it is determined that the waste is acceptable, the following additional steps must be completed:

- Develop procedures for managing the waste including inspection, handling, disposal, and any other conditions of acceptance.
- If the ISWMP needs to be modified, a revision will be prepared and submitted to the MPCA.
- Maintain generator file and waste acceptance records at the facility.

3.3 Review of Laboratory Data

The parameters listed Table 2 are ones for which there is a hazardous waste limit set by the USEPA. The TCLP test is the laboratory method used to determine if a material is hazardous or not, as it uses a leaching procedure to simulate landfill conditions. However, in most cases, the laboratory data provided by generators for solid materials will be for the total concentrations of parameters in the materials (reported in milligrams per kilogram, or mg/kg, or micrograms per kilogram, or ug/kg). The total concentrations will always be higher than the TCLP concentrations (reported as milligrams per liter, or mg/l).

As an initial comparison of total concentrations versus TCLP concentrations, divide the total concentration by 20. This “Rule of 20” is based on the fact that the weight of the fluid used for the leaching process in the TCLP test is 20 times the weight of the sample. Therefore, the theoretical maximum concentration in the fluid at the completion of the leaching process is 1/20 of the total concentration in the sample, assuming 100 percent of the parameters being tested leaches during the test. If the result of dividing the total concentrations by 20 is less than the acceptance limits, the waste is acceptable.

In practice, the ratio of the total concentration to the TCLP concentration is more than 20, since less than 100 percent leaches from the sample. If the result of dividing the total concentration by 20 is greater than the acceptance limit, the waste may still be acceptable. Request a TCLP test for the parameters in question, which will give a definitive result.

3.4 Evaluation of Wastes as Alternative Daily Cover

Some waste types, including contaminated soil, some foundry sands, C&D fines etc., are suitable for use as Alternative Daily Cover (ADC). ADC replaces native soil as daily/intermittent/intermediate cover. The waste must first be determined to be acceptable at the landfill. Then, the waste can be

evaluated for use as ADC if it can fulfill the function of native soil as a cover material, in that it must have the following characteristics:

- Be “soil-like”
- Able to control vectors, odors, and fire
- Is not subject to undue erosion or dust creation
- Does not pose a physical hazard to vehicles or workers.
- Must not be odorous
- Must not contain chemical parameters that exceed the ADC limits in Table 2

ADC will be placed in a 6-inch layer over active working areas, and cannot be used on external side slopes. See Table 1 and Appendix B for information on evaluation and management of materials as ADC. The action limits for ADC are different than the action limits for disposal. See Table 2 for the ADC action limits

3.5 Emergency Disaster Response Material Acceptance

In the event of a natural disaster such as but not limited to; tornado, high winds, flooding, fire, earthquake or act of terrorism Dem-Con Pilgrim Landfill may accept material per Dem-Con’s ISWMP.

4.0 MANAGEMENT OF INDUSTRIAL WASTES

Information on general procedures to manage industrial wastes is provided below. Additional information for certain specific wastes is included in Table 1. As new waste types are approved for acceptance, corresponding entries will be added.

4.1 General Inspection Procedure

Waste management is an important aspect of the operating procedures at Dem-Con Pilgrim Landfill. When a new account is established, customers are required to accept Dem-Con's policy of inspecting their loads for unacceptable wastes and to work with generators to eliminate those wastes from the loads. Various measures, such as providing generators with lists of acceptable and unacceptable wastes, providing two boxes at a site, one for acceptable and one for unacceptable wastes, are suggested for use by the haulers in complying with the Dem-Con acceptance policy. Haulers must walk around their loads and inspect them for unacceptable items after they have tipped. Dem-Con requires that haulers remove the entire load from the fill area if too many unacceptable items are found. This encourages haulers to work with generators to produce clean, acceptable waste streams. The site operators then inspect the load as they work the material into the current tipping area. Unacceptable items are removed when identified by the operator. Operators are trained and certified by the MPCA in waste identification and management procedures.

When unacceptable items are found in the waste after the hauler has left, they will be removed and stored in roll-off boxes prior to removal. The items will typically be removed to a recycler or appropriate disposal facility.

4.2 Disposal Procedure

All loads are checked in at the landfill gatehouse. In some cases, loads of industrial waste will be tracked using a Waste Manifest Form (see example Appendix C), which must be presented at check-in. The date, time, customer name and type and quantity of waste are documented. Dem-Con does not assume acceptance of materials until the load is inspected, spread and compacted, and additional material is placed over the top.

In general, industrial waste loads are disposed of in the same area and manner as demolition debris accepted at the landfill. This minimizes the size of the working face and allows for efficient inspection and compaction.

Tables

TABLE 1
INDUSTRIAL WASTE TESTING AND MANAGEMENT PROCEDURES
Dem-Con Pilgrim Landfill (SW-254)

Waste Type	General Parameters	TCLP Parameters				Notes	Disposal Method
		Metals	VOCs	SVOCs	Herbicides/ Pesticides		
Absorbents	Paint filter, flash point		X			Determine specific parameters on case by case basis	Codisposal
Asbestos						See Appendix A	See Appendix A
Ash - coal (power plants, boilers)		X				(In future cells w/MSW-equivalent liner only)	
- Wood/biomass		See notes				Ash from wood/biomass fueled power plants/boilers accepted with no testing. If mixed with coal or other fuels, review on a case-by-case basis.	Codisposal
Ash from fires		X				Add other parameters based on building contents. Ash from intentional fires (fire department training, etc.), new building construction sites, tree and pallet burning require no testing.	Codisposal
Contaminated Soils						See Appendix B (see Section 3.4 regarding use as ADC)	Codisposal/Alternative Cover
Mercury Contaminated C&D Debris		X				Evaluate as per the MPCA Program Management Decision Memo dated May 8, 2007 (Appendix E)	Codisposal
Dredged Materials	Copper, Arsenic, PAHs (carcinogenic and non-carcinogenic)					See Dredged Materials Section in Appendix B (see Section 3.4 regarding use as ADC)	Codisposal/Alternative Cover
Epoxy, Fiberglass and Urethane Resins		X	X			Review MSDS's for additional parameters to test	Codisposal
Foundry Wastes		X				Review process for additional parameters to test. Review for use as ADC (see Section 3.4).	Codisposal/Alternative Cover
Refractory Materials		X					Codisposal
Glass - Windshield and Specialty		Pb				Add Cr analysis for mirrored glass	Codisposal
Old Dumps	Molybdenum, iron, boron	X					Codisposal
Off-Spec Products							
- Adhesives		X	X	X			
- Wood treatment		X	X	X	X		
Paint Residue, Filters, Dust	Flashpoint	X	X			Review MSDS's for additional parameters to test	Codisposal
Wastewater Treatment Residues	PCBs, RCRA Metals, E-Coli/Fecal Coliform	X				Must be treated by process to reduce pathogens or not contain pathogens as listed in Mn Rule	Codisposal
Sandblasting Waste		X				If from inner wall of tank, add parameters based on contents	Codisposal
Shredder Fluff	PCBs	X				Evaluate per MPCA P.M.D.	Codisposal
Sludges - Paper Mill	Paint filter	X					Codisposal
- Ink	Paint filter, flash point	X	X				Codisposal
- Metal finishing	Reactive cyanide, Reactive sulfur, pH, flash point	X	X				Codisposal
Spent Carbon Filters		X	X			Determine specific parameters based on use of filters	Codisposal
Spilled Non-Hazardous Materials / Other Wastes	*	*	*	*	*	* Review MSDS and other information to determine sampling requirements	Codisposal
Storm Sewer Grit	PCBs, RCRA Metals	X				PCB's based on site specific conditions	Codisposal
Waste Traps from Garages	Metals, TPH, VOC, PCBs	X	X	X		Determine specific parameters on case by case basis	Codisposal

TABLE 2 - ACCEPTANCE LIMITS
Dem-Con Pilgrim Landfill (SW-254)

Parameter	CAS No.	RCRA No.	Acceptance Limits for Disposal		Acceptance Limits for ADC
			TCLP (mg/l)	Total (mg/kg)(1)	Total (mg/kg)(3)
TCLP Metals					
Arsenic	7440-38-2	D004	5	100	9
Barium	7440-39-3	D005	100	2000	41000
Cadmium	7440-43-9	D006	1	20	23
Chromium	7440-47-3	D007	5*	100*	200
Lead	7439-92-1	D008	5	100	460
Mercury	7439-97-6	D009	0.2**	4**	3.1
Selenium	7782-49-2	D010	1	20	1200
Silver	7440-22-4	D011	5	100	1200
TCLP VOCs					
Benzene	71-43-2	D018	0.5	10	42
Carbon tetrachloride	56-23-5	D019	0.5	10	230
Chlorobenzene	108-90-7	D021	100	2000	700
Chloroform	67-66-3	D022	6	120	31
1,4-Dichlorobenzene	106-46-7	D027	7.5	150	200
1,2-Dichloroethane	107-06-2	D028	0.5	10	72
1,1-Dichloroethylene	75-35-4	D029	0.7	14	1200
Methyl ethyl ketone	78-93-3	D035	200	4000	28000
Tetrachloroethylene	127-18-4	D039	0.7	14	170
Trichloroethylene	79-01-6	D040	0.5	10	20
Vinyl chloride	75-01-4	D043	0.2	4	56
TCLP SVOCs					
o-Cresol (2-methylphenol)	95-48-7	D023	200	4000	8700
m-Cresol (3-methylphenol)	108-39-4	D024	200	4000	8700
p-Cresol (4-methylphenol)	106-44-5	D025	200	4000	3500
Cresol(2)		D026	200	4000	3500
2,4-Dinitrotoluene	121-14-2	D030	0.13	2.6	78
Hexachlorobenzene	118-74-1	D032	0.13	2.6	3.2
Hexachlorobutadiene	87-68-3	D033	0.5	10	17
Hexachloroethane	67-72-1	D034	3	60	150
Nitrobenzene	98-95-3	D036	2	40	380
Pentachlorophenol	87-86-5	D037	100	2000	46
Pyridine	110-86-1	D038	5	100	n/a
2,4,5-Trichlorophenol	95-95-4	D041	400	8000	18000
2,4,6-Trichlorophenol	88-06-2	D042	2	40	180
TCLP Pesticides/Herbicides					
Chlordane	57-74-9	D020	0.03	0.6	100
2,4-D	94-75-7	D016	10	200	n/a
Endrin	72-20-8	D012	0.02	0.4	54
Heptachlor (and its epoxide)	76-44-8	D031	0.008	0.16	4.2
Lindane	58-89-9	D013	0.4	8	0.17
Methoxychlor	72-43-5	D014	10	200	n/a
Toxaphene	8001-35-2	D015	0.5	10	16
2,4,5-TP (Silvex)	93-72-1	D017	1	20	n/a
Other Parameters					
PCBs			50 ppm		0 ppm
TPH (DRO, GRO, Oily Wastes)			no limit***		5,000 ppm
Flammability of a Solid (SW -846 & Test Method 1030)					

Notes: 1. Total concentration (mg/kg) is 20 times the mg/l value and is a guidance value.

UPDATED APRIL 2026

If the guidance value is exceeded, run the TCLP test. The TCLP result takes precedent.

2. If o, m, and p-cresol cannot be separated, total cresol is used.

3. With the exception of arsenic, ADC acceptance is based on the Industrial SRVs as provided by the MPCA.

Because natural arsenic concentrations are above the SRV, the background threshold value (BTv) is used.

*4. Wastes containing chromium which is exclusively or nearly exclusively trivalent chromium and do not generate hexavalent chromium are not D007 hazardous wastes if managed in non-oxidizing environments.

** 5. The acceptance limit for mercury contaminated soils and C&D debris is 10 ppm (or >10 ppm with written pre-approval from the MPCA) as per the MPCA Program Management Decision Memo dated May 8, 2007.

*** 6. There is no limit on TPH, DRO, or GRO as long as materials meet all other criteria of the ISWMP such as free liquids, odor, etc.

Appendix A

Asbestos-Containing Materials Guidance

ASBESTOS-CONTAINING MATERIALS GUIDANCE FOR LANDFILL DISPOSAL

Background

Asbestos is a mineral mined out of the ground for use in various products. The use in products has dropped significantly since the early 1970's when it was banned from further use in certain products. The bans were issued because long term exposure to airborne asbestos can result in respiratory diseases. Many of these products are now being removed as they wear out, or age.

From a landfill operator's standpoint, the primary hazard related to asbestos is possible inhalation, since asbestos is linked to lung diseases. Management of ACM is regulated by the United States Environmental Protection Agency (USEPA) under the code of federal regulations (CFR). Specifically, Title 40, section 61 (cited as 40 CFR 61), is a portion of the National Emission Standards for Hazardous Air Pollutants (NESHAP) that deals specifically with asbestos. There are requirements for all manner of asbestos related uses and management, including demolition and renovation (40 CFR 61.145), disposal procedures by generators (40 CFR 61.150), and requirements for landfill (40 CFR 61.154).

ACM is any material that contains at least 1% asbestos and any filters or packaging used during asbestos abatement. ACM comes in two forms; friable and non-friable. Friable ACM is any material that, when dry, can be crumbled or pulverized by hand pressure. Non-friable ACM cannot be crumbled or pulverized by hand pressure.

The NESHAP regulation divides non-friable ACM into two categories. Category 1 includes packings, gaskets, resilient floor covering and asphalt roofing products with at least 1% asbestos. Category 2 includes any non-friable ACM excluded from Category 1. Category 1 and 2 non-friable ACM is not subject to the NESHAP requirements, unless it has become friable. Dem-Con will accept only Category 1 and 2 non-friable ACM in the unlined areas. The lined areas of the landfill can accept Category 1 and 2 non-friable ACM as well as friable ACM..

For the remainder of this section, the requirements discussed refer to regulated ACM, which includes all friable materials and non-friable materials that may become friable. Information specific to category 1 and 2 non-friable materials is included in parentheses as necessary.

Manifesting and Documentation

EPA regulations require that, if a facility which is being demolished or renovated that has a minimum of 260 linear feet of ACM on pipes, 160 square feet of ACM on facility components, or 35 cubic feet of ACM from facility components which could not previously be measured, notification must be made to the regional program administrator of the demolition or renovation activity. If this notification is required, all shipments of ACM to the landfill must have a waste shipment record, or manifest. Dem-Con requires that all shipments have a manifest regardless of the quantity involved. See Appendix C for an example of a manifest form available for use by haulers.

Dem-Con will maintain shipping records for a period of 2 years in accordance with NESHAP regulations. Dem-Con will maintain until closure a record of fill locations and elevations, as well as volume of ACM

disposed. Documenting ACM disposal locations is important to ensure that the ACM is not disturbed during any future excavations. If separate cells are used, the horizontal and vertical location of ACM will be defined by the most recent airspace survey preceding ACM placement and the first airspace survey after ACM placement.

Documentation of the locations of ACM disposal will be submitted with the closure report for the facility. The documentation will also be submitted to the Blue Earth County Recorder as required as part of the final closure process.

Disposal Requirements

The following procedures must be followed for proper delivery and inspection of regulated ACM loads:

- Advance notification of the delivery of ACM loads is required.
- The regulated ACM must be sealed in leak-tight containers, or wrapping (≥ 6 mil) plastic bags or wrapping).
- A manifest must accompany every load, and the volume reported must be accurate to within 10% of the volume of the load. The generator (or authorized agent) and hauler must sign the manifest. (For Category 1 & 2 non-friable ACM, provide 1 manifest per day per job.)
- The manifest must be signed after verification of the load. The appropriate copy must be mailed to the Generator within 30 days. The manifest must be retained by the landfill for a minimum of two (2) years.
- The material must be shipped in such a manner (e.g., open top box, compactor box with inspection ports, drums) that will allow verification of proper packaging, labeling, and volume.
- A loading sign must be used during loading and unloading, worded as follows:

Danger

Asbestos Dust Hazard
Cancer and Lung Disease Hazard
Authorized Personnel Only

- If any unacceptable waste is observed, it will be the sole responsibility of the hauler to remove said waste. If the rejected waste is regulated asbestos, the rejection will be noted on the manifest and a copy sent to the MPCA. The hauler will immediately contact a certified asbestos abatement contractor to properly contain and remove ACM if necessary. Dem-Con must notify the MPCA within 48 hours of a hauler tipping unacceptable regulated ACM at the landfill. All rejected loads will be recorded by Dem-Con on a load rejection report, including the date, volume, hauler, ticket number and reason for rejection.
- The hauler is responsible for handling and unloading of all non-friable ACM. The ACM must be handled in a manner that will prevent visible emissions from the waste material. The hauler is responsible for training their personnel so they are properly informed of the health and safety issues associated with ACM.
- The location, depth, area and volume of ACM disposed of in the landfill must be recorded.
- Asbestos must be covered with six (6) inches of compacted, non-asbestos containing material or soil as soon as practical, but no later than the end of the working day. The ACM will be covered prior to compaction to prevent the release of asbestos fibers as well as to protect the waste so that

non-friable ACM does not become subject forces that will crumble or pulverize it, converting it to a friable state.

- No ACM will be placed within 5 feet of the base, side slope or final grade to ensure long-term protection.

A separate cell may be established at a location apart from the active working face. ACM will be dumped as described above. A minimum of six (6) inches of non-asbestos containing material or soil will be placed over the ACM as soon as practical, but no later than the end of the working day. The location designated for ACM disposal will move as landfilling progresses over the site.

Emergency Procedures

Emergency situations include, but are not limited to, the disturbance of previously buried ACM and discovery of unacceptable or undocumented ACM at the landfill. In the event of an emergency situation, a certified asbestos abatement contractor will be immediately notified. At a minimum, the area will be secured to keep landfill personnel and haulers away until the abatement contractor arrives. Under no circumstances will Dem-Con personnel handle or package any ACM.

Dem-Con personnel are trained in the facility's ACM management procedures. The procedures will be reviewed on a routine basis during regular site safety meetings.

In the event it becomes necessary to disturb buried ACM, the following procedures will be followed:

- Written notification, including a project description and schedule of proposed activity, will be submitted in writing to the MPCA a minimum of 45 days in advance. The advance notice period may be waived if the MPCA agrees that an emergency condition exists at the landfill.
- A certified asbestos abatement contractor will be on-site throughout the project to observe work and ensure that all proper regulations are followed.

Appendix B

Contaminated Soils

CONTAMINATED SOILS

Background

Soils contaminated with a variety of chemicals are acceptable in the lined area of the landfill. For the purposes of evaluation for acceptance, contaminated soils can be divided into two categories; petroleum contaminated soils and soils contaminated with other chemicals.

Evaluation of Laboratory Data

The analysis conducted on soils is typically for total concentrations, reporting in mg/kg or ug/kg. To evaluate if soil is acceptable, convert the results to mg/kg (if necessary), and see if the results are less than 20 times higher than the acceptance limits. If so, the soil is acceptable. If some parameters are more than 20 times the acceptance limits, request a TCLP test. Typically, the ratio of the total concentration to TCLP concentration is greater than 20, so the soil still may be acceptable pending the TCLP results. When applicable, if multiple samples of the totals analysis exceed the rule of 20, TCLP should be done for the highest 30% of the total samples that exceed this rule of 20 for any contaminant. There should be a minimum of 3 TCLP samples done for each project that has multiple exceedances of the rule of 20.

Analytical Requirements - Petroleum Contaminated Soils

These are soils from sites with contamination from various petroleum products at levels that are too high to be used as fill or to remain on-site. The testing required is based on the type of product present in the soil. It is important to determine the source of the contamination and the history of operations at the location as part of the evaluation process. The testing requirements for each source of contaminated soil should be evaluated on a case-by-case basis, as follows:

Analytical Requirements – Petroleum Contaminated Soil

PRODUCT	TEST REQUIRED
Regular Gasoline or Aviation Gasoline	VOCs, GRO, lead
Unleaded Gasoline	VOCs, GRO
Unused Product (Fuel Oil, Motor Oil, Diesel Fuel, Kerosene, Jet Fuels, Mineral Oil/Spirits, Crude Oil, Stoddard Solvents)	VOCs, DRO, PAH*
Used Oil	VOCs, DRO, RCRA metals, PCBs, PAHs
Hydraulic Fluids	VOCs, DRO, PAH*, PCB**
Unknown	Case by case
All Products	Flashpoint*, paint filter liquids test*

Notes:

** Optional based on-site conditions or soil moisture condition*

***For hydraulic fluid used in elevators, subject to high heat prior to the 1980s*

Analytical Requirements – Other Contaminated Soils

These are soils from sites with contamination from products or substances other than petroleum. The testing required is typically based on the past use of the site. It is important to determine the source of the contamination and the history of operations at the location as part of the evaluation process. The testing requirements for each source of contaminated soil should be evaluated on a case-by-case basis, as follows:

Analytical Requirements – Other Contaminated Soil

SOURCE	TESTS REQUIRED
Plating shops	RCRA metals, pH
PCB sources (transformers, etc.)	RCRA metals, total PCBs
Pesticides	TCLP pesticides
Used batteries	Lead
Unknown	Case-by-case

Testing Frequency

The number of tests recommended based on the estimated volume of soil is shown below.

Frequency of Testing

VOLUME (CY)	NUMBER OF TESTS
0 – 500	1
500 – 1,000	2
1,000 - 2,000	3
2,000 – 4,000	4
Each additional 2,000	1 additional

Use of Contaminated Soils as Alternative Daily Cover

Soil can often be used as alternative daily cover (ADC), depending on the physical characteristics and contaminant concentrations. A specific set of action limits is used to determine if soils or other suitable materials can be used as ADC, as shown on Table 2. Soil must meet the ADC actions limits and have the appropriate characteristics discussed in Section 3.4.

Soil accepted as ADC will be placed in a 6-inch layer over exposed waste and cannot be placed on external sideslopes.

Analytical and Sampling Requirements for Dredged Materials

Dredged materials include material that is excavated at or below the Ordinary High-Water Level of water basins, watercourses, public waters, or public waters wetlands, as defined by Minn. Stat. 103G.005. The testing and sampling of these soils will be performed in accordance with the Minnesota Pollution Control Agency Managing of Dredged Materials (MPCA Dredged Materials) document dated June 2009 and as amended from time to time.

Dredged materials removed from municipal or urban stormwater systems will follow the sampling requirements detailed in the Modified Characterization and Permit Approach for Urban Stormwater Ponds section of the MPCA Dredged Materials document. This section requires a minimum baseline sampling for Copper, Arsenic, and Polycyclic Aromatic Hydrocarbons (PAHs), both carcinogenic and non-carcinogenic. However, because the land use within the drainage area of a stormwater pond can be unique, additional sampling may be required based on the risk assessment approach provided in Chapter 3 of the MPCA Dredged Materials document.

The dredged materials may be used as ADC if they meet the ADC action limits listed in Table 2 and have the appropriate characteristics discussed in Section 3.4 of the ISWMP. Soil accepted as ADC will be placed in a 6-inch layer over exposed waste and cannot be placed on external side slopes. All dredged material, whether accepted as ADC or not, must pass the paint filter free liquids test.

Disposal and Sampling Requirements for Non-hazardous Mercury Contaminated Soils

Mercury contaminated soils will be acceptable in the lined area of the Dem-Con Pilgrim landfill in accordance with the May 8, 2007 MPCA Program Management Decision Memo regarding the disposal of mercury-contaminated soils and renovation/demolition debris in Minnesota landfills (Appendix E). These soils will be tested for mercury as well as other constituents as determined by a case specific evaluation of the project. The analytical results for the soils will be compared with the waste acceptance limits listed in Table 2. The waste acceptance limits and disposal practices for mercury contaminated soil in the lined landfill shall be in accordance with the following parameters:

- Waste with total levels of 0-4 ppm. No special handling requirements.
- Waste with total levels of 4-10 ppm, if immediately covered with six (6) inches of soil upon acceptance.
- Waste at total levels >10 ppm may be acceptable with written pre-approval from the MPCA, on a case-by-base basis, depending on volume and concentration. Additional requirements include:
 - Transporting vehicles must be lined and the waste covered with polyethylene sheeting;
 - The waste must be immediately covered with six (6) inches of soil upon acceptance.

Only non-hazardous mercury-contaminated soils and construction/demolition debris that meet the above parameters and are free of elemental or free mercury will be accepted at the Dem-Con Pilgrim landfill.

Appendix C

Special Waste Manifest Form

		WASTE MANIFEST FORM MPCA PERMIT SW-254		Manifest #:	
G E N E R A T I O N	Work Site Name: Work Site Address: City, State, Zip: Contact Name: Contact Phone #:		<u>Waste Disposal Site</u> Dem-Con Landfill - Pilgrim 57032 231st Lane Mankato, MN 56001 952-445-5755		
	Contractor Name: Street Address: City, State, Zip: Contact Name: Contact Phone #:		<u>Responsible Agency</u> MPCA 520 Lafayette Road North St. Paul, MN 55155 (651) 296-6300		
	BILL TO #: PROFILE #:		Additional Generator Information:		
	Description of Materials:		Total Quantity: ☐ CY ☐ TON		Special Handling/Additional Info:
	Generator/Contractor Certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. I further certify that the contents of this consignment do not contain hazardous waste as defined in 40 CFR Part 261 or MN Rule Chapter 7045.				
	Signature:			Date:	
Printed Name:			Title:		
T R A N S P O R T E R I N F O R M A T I O N	TRANSPORTER INFORMATION				
	NAME ON TRUCK:			TRUCK NUMBER:	
	TRANSPORTER 1 (Acknowledgement of receipt of materials)				
	Company Name:		Company Address:		Company Phone #:
	Driver's Name (Printed):		Signature:		Date:
	TRANSPORTER 2 (Acknowledgement of receipt of materials)				
	Company Name:		Company Address:		Company Phone #:
	Driver's Name (Printed):		Signature:		Date:
F A C I L I T Y	FOR DEM-CON ONLY				
	Discrepancy Indication Space:				
	Waste Disposal Site Owner or Operator: Certification of materials covered by this manifest except as noted in "Discrepancy Indication Space"				
	Print Name:		Signature:		Date:

COMPLETE TWO COPIES FOR EACH LOAD

DEM-CON: ONE COPY | TRANSPORTER: ONE COPY

Appendix D

Waste Profile Sheet



DEM-CON PILGRIM LANDFILL
WASTE PROFILE SHEET

CUSTOMER JOB #:
DEM-CON PROFILE #:

Generator Information		Customer/Hauler Information		☐ Same as Generator
1. Generator Name		8. Customer Name		
2. Site Address		9. Customer Address		
3. City, State, Zip		10. City, State, Zip		
4. Contact Name		11. Contact Name		
5. Telephone		12. Telephone		
6. Fax		13. Fax		
7. Email		14. Email		
Waste Stream Information				
1. Waste Name:				
2. Description of facility/site history:				
3. Describe the process and source of the generated waste:				
4. Typical Color(s):				
5. Strong Odor: ☐ Yes ☐ No If yes, describe:				
6. Physical State at 70°F: ☐ Solid ☐ Liquid ☐ Powder ☐ Semi-Solid or Sludge ☐ Other:				
7. Waste Composition: ☐ Homogeneous/Uniform ☐ Non-Homogeneous or Layered				
8. Water Reactive? ☐ Yes ☐ No If yes, describe:				
9. pH Range: ☐ ≤ 2 ☐ 2.1 - 12.4 ☐ ≥ 12.5 ☐ N/A (solid) ☐ Actual:				
10. Liquid Flash Point: ☐ < 140°F ☐ ≥ 140°F ☐ N/A (solid) ☐ Actual:				
11. Flammable Solid: ☐ Yes ☐ No				
12. Waste Composition and Constituents (List all known or attach document):			%	ppm
Waste Stream Properties (Answer ALL questions)				
13. Is this waste a stream that contains any D, F, K, U or P listed as hazardous waste; either in pure form, as a mixture or treatment residue?		☐ Yes ☐ No	20. Does this waste stream contain PCB material? If yes, concentration: ppm ☐ Yes ☐ No	
14. Is this waste explosive?		☐ Yes ☐ No	21. Does this waste contain radioactive material? ☐ Yes ☐ No	
15. Is this waste sewer sludge?		☐ Yes ☐ No	22. Does this waste contain absorbents? ☐ Yes ☐ No	
16. Is this waste demolition & /or construction debris?		☐ Yes ☐ No	23. Does this waste stream contain fuming acids? ☐ Yes ☐ No	
17. Is this putrescible waste?		☐ Yes ☐ No	24. Does this waste contain oxidizers? ☐ Yes ☐ No	
18. Is this waste lethal (by Minn. Rules 7045.0131 Subp. 6)?		☐ Yes ☐ No	25. Does this waste contain asbestos? ☐ Yes ☐ No	
19. Does this waste contain untreated, regulated, medical or infectious waste?		☐ Yes ☐ No		
26. Sample Information (check ALL that apply):				
☐ Sample submitted with profile ☐ Laboratory analysis submitted ☐ Material Safety Data Sheet Submitted ☐ Other:				
Waste Volume and Shipping Information				
Check One: ☐ One Time Event ☐ Ongoing Waste Generation				
Estimate Annual Quantity _____ ☐ Tons ☐ Cubic Yards ☐ Other:				
Shipping Frequency _____ Units Per ☐ Month ☐ Quarter ☐ Year ☐ One Time ☐ Other:				
Method of Shipment ☐ Roll-off ☐ End Dump ☐ Other:				
DOT Hazardous Material? ☐ Yes ☐ No				
Certification of Non-Hazardous Waste & Approval Conditions				
I hereby certify that the information submitted in this profile and all attached documents contain true and accurate description of the waste material and that the waste is nonhazardous as defined in Title 42, United States Code Section 6903 and Minnesota Statute Section 116.06, Subdivision 11. Furthermore, I certify the following: that analytical data attached pertaining to the profiled waste was derived from testing a representative sample in accordance with 40 CFR 261.20 (c) or equivalent rules; that I am an agent signing on behalf of the Generator and have been delegated this authority by the generator; that any changes that occur in the character of the waste (i.e. changes in the process or new analytical) will be identified by myself or the Generator and disclosed to Dem-Con Companies prior to shipment of the waste to Dem-Con Companies. I understand that any changes in the character of the waste that are not reported to Dem-Con Companies in writing prior to shipment of the waste will invalidate this approval. I, on behalf of the generator, hereby agree to fully indemnify Dem-Con Companies for any damages and/or costs incurred as a result of any misrepresentations or falsifications made herein.				
Signature	Printed Name	Title	Date	
FOR DEM-CON USE ONLY				
Approval Decision: ☐ Approved ☐ Not Approved				
Management Method: ☐ Landfill ☐ Recycling Processing ☐ Off-Site Transfer ☐ Other:				
Management Facility Precautions, Special Handling Procedures or Limitations:				
☐ Shall not contain free liquid		☐ Approval Number must accompany each shipment		
☐ Shipment must be scheduled into disposal facility		☐ Waste Manifest must accompany each load		
Dem-Con Authorization Name/Title		Signature		Date

Appendix E

MPCA Program Management Decision Memo

Disposal of Mercury-Contaminated Soils and Renovation/Demolition Debris in Minnesota Landfills



Minnesota Pollution Control Agency

PROGRAM MANAGEMENT DECISION MEMO

ISSUE: Disposal of mercury-contaminated soils and renovation/demolition debris in Minnesota landfills

EFFECTIVE DATE: 5/8/2007

REPLACES: Program Management Decision Memo "Disposal of Mercury-contaminated Soils in Minnesota Landfills," effective March 1, 2004

DECISION

Non-hazardous mercury-contaminated soils and construction/demolition debris free of elemental mercury from products subject to regulation under Minn. Stat. 115A. 932 can be accepted in lined Minnesota landfills as part of an approved industrial solid waste management plan (ISWMP) within the following parameters:

- Waste with total levels of 0-4 ppm. No special handling requirements.
- Waste with total levels of 4-10 ppm, if immediately covered with six (6) inches of soil upon acceptance.
- Waste at total levels >10 ppm may be acceptable with written pre-approval from the MPCA, on a case-by-case basis, depending on volume and concentration. Transporting vehicles must be lined, and the waste covered, with polyethylene sheeting. The waste must be immediately covered with six (6) inches of soil upon acceptance. This approval will be considered on a case-by-case basis. In order to determine mercury emission levels during waste acceptance, the MPCA may monitor emissions before, during, and after waste acceptance at a landfill. In addition, the MPCA will examine landfill-gas monitoring data to ascertain whether increased amounts of mercury are being vented. Based on the results, it is possible that waste at total levels >10 ppm may not be allowed at landfills with active gas extraction.

This decision provides for disposal in appropriate Minnesota landfills of soils and construction/demolition debris contaminated by mercury at concentrations which are non-hazardous. This decision does not apply to wastes other than soils and construction/demolition debris. For example industrial wastes such as ash are not subject to this policy. This policy does not apply to materials which have Standing Beneficial Use Determinations, or those that have received a Case Specific Beneficial Use Determination. This allowance does not include elemental mercury or materials contaminated with free mercury, which must be managed as hazardous waste.

BACKGROUND

The recent history of changing policies governing mercury disposal has led to confusion among regulators, local units of government, waste generators, consultants, and landfill operators. As a result, the MPCA is adopting one policy for mercury-contaminated soils and construction/demolition debris. In addition, past policies were extremely conservative, which often led to the transportation of waste out of state, for disposal in similarly, or even less-protective, disposal environments. This policy includes special waste handling procedures to reduce potential emissions, based upon the mercury levels in the waste.

Disposal of wastes contaminated by mercury must be approved of within a landfill's ISWMP. In evaluating requests for approval, solid waste staff should consider a range of potential risk factors, including, but not limited to, releases due to methylation of mercury, vaporization during disposal and through gas vents, and leaching into ground water. Written request by the landfill, and approval by the MPCA, must be received prior to acceptance of waste covered by this policy.

In some circumstances, it may be possible to segregate wastes contaminated at high levels from those that are not, reducing the amount of material which must be disposed of out of state. All such determinations should be made in consultation with MPCA staff.

A formal letter outlining this final policy, including the website link, will be immediately sent to landfills and County Solid Waste Administrators. MPCA remediation, solid waste, and hazardous waste program staff will implement this policy change when advising outside parties of appropriate disposal options for mercury-contaminated waste.

RELEVANT STATUTES AND RULES

- Minn. Stat. § 115A.932: Prohibition of disposal of mercury or mercury-containing devices in Minnesota landfills;
- Minn. Rules, chapter 7045.0120, subpart 1, article F: Exempts disposal of coal ash from governance by hazardous waste rules; and
- Minn. Rules, chapter 7001.3300: industrial solid waste management plans.

RATIONALE

The following is a summary of historical policies governing mercury-contaminated waste:

Minnesota Statutes, section 115A.932 restricts disposal of mercury, in some forms and from certain sources, in Minnesota landfills. At the same time, some of the sites being redeveloped around the state contain mercury contaminated soils or materials within

structures may be contaminated from past improper disposal practices. In some cases, these soils or materials may need to be removed from the site, depending upon the levels of contamination and the planned land and site uses. In addition, routinely generated industrial wastes such as foundry sand, wastewater sludge, and slag can contain residual mercury.

How should such materials be disposed of, and under what circumstances should the MPCA require that such material be shipped out of state for disposal? There are also ethical and environmental issues regarding whether it makes sense to ship Minnesota's mercury contaminated waste to another state, if it might be managed safely here.

MPCA staff often had interpreted Minnesota Statutes, section 115A.932 to mean that essentially no mercury could be disposed of in Minnesota landfills, regardless of its nature or source, and that the mercury contaminated material must be disposed of in accordance with Minnesota Rules, chapter 7045.

It appears, however, that Minnesota Statutes, section 115A.932 had been interpreted too broadly, to prohibit disposal of materials it was not intended to prohibit. At the time the statute was developed, the Legislature was concerned about potential mercury contamination from mercury-containing devices, mercury-containing compounds, or bulk mercury, being intentionally placed in solid waste for disposal. It can be argued that the legislature did not intend for the statute to apply, for example, to soils contaminated by historical use of coal ash as fill material.

This broad reading of the law has led to confusing and conflicting requirements for disposal practices. On the one hand, the MPCA sent a memo to landfill operators (June 1, 2000) stating that materials which "passed" a TCLP test may be disposed of in a landfill, and that this level for mercury (0.2 ppm in the TCLP leachate) is used in industrial solid waste management plans as a cut-off for acceptance of mercury-containing materials. Again, the concern was mainly over acceptance of bulk mercury or mercury-containing devices and debris.

A leaching test is simply a method for determining whether a concentration of a contaminant in soils or other materials are high enough that the contaminant can leach out of the material at concentrations that exceed thresholds established by the United States Environmental Protection Agency (EPA). Therefore, the test helps determine whether the material should be evaluated and handled as a hazardous waste.

On the other hand, an MPCA remediation program had begun using a concentration of 0.7 ppm in soil (rather than in leachate) as the criterion for determining whether to ship the soil out of state for disposal in a hazardous waste landfill. At that time, this level corresponded to the MPCA's risk-based "soil reference value" (SRV) for residential land use. It may be argued, however, that using the 0.7 ppm concentration as the cut-off level for sending such soil out of state for disposal did not necessarily make sense. SRVs represent conservative screening levels up to which contamination might safely remain in place under certain exposure conditions. Establishment of final cleanup levels may

involve reducing on-site concentrations, altering exposure conditions, or some combination of the two. The 0.7 ppm level had been developed solely to be used as a risk screening level for mercury contamination in soils in a setting to be redeveloped for residential use. So, it was possible to build a house or a child's play area on soils containing mercury at concentrations up to 0.7 ppm.

The MPCA's "Risk-based Guidance" documents from which this level was drawn also suggested that soils with mercury contamination of up to 2 ppm might remain in place under commercial or industrial land-use scenarios. Therefore, using 0.7 ppm as the criterion for determining whether to ship soils from some sites out of state (not allowing them to be placed in landfills) could result in the paradox of allowing soils at other sites contaminated at concentrations of up to at least 2 ppm to remain in place beneath new developments. It stands to reason, then, from a risk standpoint, that soils contaminated at concentrations at least somewhat higher than 0.7 ppm might safely be placed in lined landfills, where even long-term exposures would be quite limited.

In order to recommend a disposal cut-off level for concentrations of mercury in soils, in March of 2004, a Program Management Decision Memo was issued which allowed soils contaminated with mercury at concentrations of up to 4 ppm to be disposed of in municipal solid waste landfills (and possibly some other types), because 4 ppm was a pragmatic benchmark that should protect human health from an air emission pathway, and yet did not unduly restrict management of soils contaminated by ash and other waste often encountered at cleanup sites.

This approach represented a reasonable compromise among the current range of disposal practices involving mercury contaminated soils. For example, the MPCA currently allows coal ash (commonly a source of mercury in soils from redevelopment sites) to be spread as a portion of the daily cover on municipal solid waste (MSW) landfills. In addition, there are landfills in Minnesota operated by utility companies specifically for disposal of coal ash. Indeed, Minnesota already approves application of soils with mercury concentrations significantly higher than those recommended in this policy (17 ppm) to agricultural lands as a soil amendment. Moreover, disposing of contaminated soil in an appropriate landfill is essentially moving an old, unmanaged release to be managed in safer, more controlled conditions, rather than creating a new release of mercury. This decision applied to mercury-contaminated soils only.

In late 2005, a request for a reevaluation of MPCA policy was received. The request was made after two large projects involving renovations of buildings that were contaminated from past, improper disposal of mercury and/or mercury-containing devices were undertaken. The request stated that using the Residential SRV as a disposal standard was too stringent, and caused an economic hardship due to increased costs from transporting debris out of Minnesota. The MPCA's reevaluation of the policy suggested that using the Residential SRV for mercury disposal was indeed too stringent a standard when applied to controlled disposal of waste in a lined landfill. The MPCA examined the totals data from one of the above projects and the vast majority of the waste fell below 1.5 ppm, which is the current Industrial SRV. That appeared to be a reasonable threshold. As a result, the MPCA decided that it would allow disposal of mercury-contaminated

renovation/demolition debris in a lined landfill at levels up to 1.5 ppm. This was communicated to landfills and County Solid Waste Administrators in a letter dated July 14, 2006.

In September of 2006, the MPCA was approached regarding disposal of large amounts of mercury-contaminated soil that were being generated as a result of remediation of a salvage yard. A large amount of the soil exceeded the 4 ppm threshold allowance, so was therefore being disposed of out of state. The MPCA learned it was being disposed of in a biopile in Wisconsin, which is a less protective environment than a lined landfill. Additional data provided showed completed and pending soil remediation projects totaling over 85,000 cubic yards of contaminated soil that exceeded 4 ppm, that would be disposed of outside of Minnesota.

The MPCA concludes that with special handling at landfills, based on totals levels, mercury-contaminated wastes can be safely accepted within Minnesota. The Minnesota Department of Health was consulted regarding this policy, and found it to be reasonable.

APPROVAL

I have reviewed this management decision and I concur.

Signed: Tim Scherkenbach

Date: 5/8/07

Tim Scherkenbach
Assistant Commissioner

Signed: James L. Warner

Date: 5/8/07

James L. Warner, P.E.
Director, Industrial Division

Signed: Lisa F. Thorvig

Date: 5/8/07

Lisa Thorvig
Director, Municipal Division

Signed: Gary Pulford

Date: 5/8/07

Gary Pulford
Manager
Policy, Local Government Assistance and
Solid Waste Section

Signed: _____

Date: Dave Richfield

Dave Richfield

Supervisor, Land Policy Unit

Policy, Local Government Assistance and Solid Waste Section



Mercury-catalyzed Polyurethane Flooring and Mercury-contaminated Demolition Debris and Soil Disposal in Minnesota

Mercury is an element that can cause harmful environmental and health effects when disposed of improperly. Because of previous practices, mercury contamination can be found in some soils and demolition debris in Minnesota. In one particular application, mercury was used as a catalyst in some types of synthetic flexible flooring between the 1960s and early 2000s. This flooring, called mercury-catalyzed polyurethane flooring (MCPF), is most commonly found in athletic facilities.

Normally, mercury and mercury-contaminated wastes are prohibited from land disposal in Minnesota under regulations of the Minnesota Pollution Control Agency (MPCA). However, the MPCA will allow some such wastes to be disposed in Minnesota landfills under the conditions discussed in this fact sheet.

Do I have MCPF in my building?

MCPF was most commonly used as a poured-in-place, rubber-like flooring and could be tinted to any color. It was made by many manufacturers under multiple brand names. The only way to determine whether a particular flooring contains mercury is to test a representative (full-thickness) sample using a reputable testing laboratory. The Minnesota Department of Health (MDH) administers a voluntary laboratory certification program. Although you are not required to use a certified laboratory, the MDH or MPCA can help you locate one if you choose.

Must I remove MCPF if I find it?

While Minnesota laws do not require you to remove MCPF, it may continue to release harmful gaseous mercury into a building's air for decades after installation. MDH has published indoor air quality guidance for mercury at <http://www.health.state.mn.us/>.

Mercury vapor from MCPF can penetrate and contaminate other materials, such as plastic and wood. Attempting to cover or seal MCPF instead of removing it may create more contamination and cost.

Ensure that anyone who may be exposed to the flooring or debris during removal (including employees, contractors, and students) is properly protected from exposure to mercury.

How must I dispose of suspected MCPF and related debris?

Before disposing of suspected MCPF and related debris, test representative samples of the flooring and any other debris for both total and leachable mercury content. The type of disposal allowed for the waste will depend on both of these values and is shown in Table 1 on the following page. Total mercury should be determined in parts per million (ppm) and leachable mercury in milligrams per Liter (mg/L).

Regardless of whether the waste is disposed of in a solid or hazardous waste landfill, ensure that the landfill is permitted to accept the waste and that you have performed any pre-treatment required by the receiving landfill. Additionally, transport the waste in a totally enclosed manner, such as in a truck bed lined and covered with plastic sheeting.

In addition to MCPF and related debris, soils contaminated by naturally-occurring mercury or historical practices, such as the use of coal combustion residuals as fill, may also be disposed according to Table 1.

Table 1: Allowed management of MCPF, related debris, and soils in Minnesota

Total mercury content	Non-hazardous waste (< 0.2 mg/L leachable mercury)	Hazardous waste (≥ 0.2 mg/L leachable mercury)
≤ 4 ppm total mercury	Minnesota solid waste landfill or out-of-state solid waste landfill No special handling required	Out-of-state hazardous waste landfill or treatment facility
$4 < 10$ ppm total mercury	Minnesota solid waste landfill or out-of-state solid waste landfill If in Minnesota, immediate coverage with 6 inches of soil	
10 - 1000 ppm total mercury*	Minnesota solid waste landfill or out-of-state solid waste landfill If in Minnesota, immediate coverage with 6 inches of soil and landfill maintains location & quantity records *MCPF only: No MPCA preapproval needed *All other related debris & soil: Must be preapproved by MPCA	Out-of-state hazardous waste landfill or treatment facility Land Disposal Restriction (LDR) may apply
> 1000 ppm total mercury	Out-of-state solid waste landfill	

More information

Guidance and requirements in this fact sheet were compiled from Minnesota Statutes, Chapters 115A and 116, and Minnesota Rules, Chapters 7035 and 7045, and incorporate regulatory interpretation decisions made by the MPCA on September 3, 2013. To review Minnesota Statutes and Rules, visit the Office of the Revisor of Statutes at <https://www.revisor.mn.gov/pubs>.

The MPCA's Small Business Environmental Assistance Program (SBEAP) can provide free, confidential compliance assistance. The Minnesota Technical Assistance Program (MnTAP) can help reduce your waste generation. Report all hazardous waste incidents to the Minnesota Duty Officer.

Metro County Hazardous Waste Offices

Anoka 763-422-7093
 Carver 952-361-1800
 Dakota 952-891-7557
 Hennepin 612-348-3777
 Ramsey 651-266-1199
 Scott 952-496-8475
 Washington 651-430-6655
 Websites [http://www.co.\[county\].mn.us](http://www.co.[county].mn.us)

Minnesota Technical Assistance Program

Toll free 1-800-247-0015
 Metro 612-624-1300
 Website <http://www.mntap.umn.edu>

Small Business Environmental Assistance

Toll free 1-800-657-3938
 Metro 651-282-6143
 Website <http://www.pca.state.mn.us/sbeap/>

Minnesota Pollution Control Agency

Toll free (all offices) 1-800-657-3864
 Brainerd 218-828-2492
 Detroit Lakes 218-847-1519
 Duluth 218-723-4660
 Mankato 507-389-5977
 Marshall 507-537-7146
 Rochester 507-285-7343
 St. Paul 651-296-6300
 Willmar 320-214-3786
 Website <http://www.pca.state.mn.us>

Minnesota Duty Officer

Toll free 1-800-422-0798
 Metro 651-649-5451
 Website <https://dps.mn.gov/divisions/bca/>

Minnesota Department of Health

Toll free 1-888-345-0823
 Metro 651-201-5000
 Website <http://www.health.state.mn.us/>

Appendix F

Liner Equivalency Calculations

Date: 5/23/12

By: Dan Riggs

Client: Dem-Con

LINER EQUIVALENCY CALCULATIONS – Confining Pressure

Objective:

Determine the amount of waste needed to achieve a hydraulic conductivity of 3×10^{-9} cm/sec on the geosynthetic clay liner, which occurs at 10 psi confining pressure.

Basis:

Vertical pressure on the liner can be expressed as:

$$(\gamma_{\text{sand,sat}} * d_{\text{sand,sat}}) + (\gamma_{\text{sand}} * d_{\text{sand}}) + (\gamma_{\text{waste}} * d_{\text{waste}}) = \sigma_{\text{GCL}}$$

or

$$d_{\text{waste}} = \frac{\sigma_{\text{GCL}} - (\gamma_{\text{sand,sat}} * d_{\text{sand,sat}}) + (\gamma_{\text{sand}} * d_{\text{sand}})}{\gamma_{\text{waste}}}$$

Where: γ = unit weight of material

d = depth of material

σ = pressure on material

Assumptions

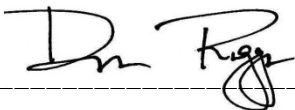
- 1.) Leachate = 1 ft (depth permitted on liner)
- 2.) Thickness of sand = 2 ft
- 3.) Unit weight of sand above leachate, $\gamma_{\text{sand}} = 1.5 \text{ tons/cu. yd} = 111.11 \text{ pcf}$
- 4.) Unit weight of leachate = unit weight of water = 62.4 pcf
- 5.) Unit weight of sand below leachate, $\gamma_{\text{sand,sat}} = 111.11 \text{ pcf} - 62.4 \text{ pcf} = 48.71 \text{ pcf}$
- 6.) Unit weight of waste = 1.3 tons/cu. yd = 96.3 pcf

Depth of waste needed:

$$d_{\text{waste}} = \frac{10 \text{ psi} * 144 \frac{\text{psf}}{\text{psi}} - (48.71 \text{ pcf} * 1 \text{ ft}) - (111.11 \text{ pcf} * 1 \text{ ft})}{96.3 \text{ pcf}}$$

$$d_{\text{waste}} = 13.3 \text{ ft}$$

Results: 13.3 ft of waste will be needed above the 2 ft of sand to confine the GCL at 10 psi

Signature: _____

Daniel J. Riggs, PE

License No. 49559

Date: 5/23/12

By: Dan Riggs

Client: Dem-Con

LINER EQUIVALENCY CALCULATIONS – Leachate Flux

Objective:

Demonstrate that a single-layer geosynthetic clay liner (GCL) performs equally well or better than a 2-foot compacted clay liner at restricting exfiltration from the landfill.

Basis:

Estimate leachate flux through each liner material based on the following equations

$$Q = Ki$$

and

$$i = \frac{h + d}{d}$$

Where: Q = leachate flux through liner ($L^3/L^2/T$)

K = vertical hydraulic conductivity ($L^3/L^2/T$)

i = hydraulic gradient (L/L)

h = leachate head on liner (L)

d = saturated liner depth (L)

Assumptions

- 1) K for compacted clay = 1×10^{-7} cm/sec (maximum allowed by MN Rules)
- 2) K for GCL = 3×10^{-9} cm/sec (maximum value from manufacturer's specification, see attached Confining Pressure calculations and attached GCL specifications)
- 3) h = 1 ft (leachate permitted on liner)
- 4) d for compacted clay liner = 2 ft (fully saturated)
- 5) d for GCL = 0.25 in, or 0.0208 ft (fully saturated)

Leachate flux through GCL

$$Q_{GCL} = \left(3 \times 10^{-9} \frac{cm}{sec}\right) \left(\frac{1ft + 0.0208ft}{0.0208ft}\right)$$

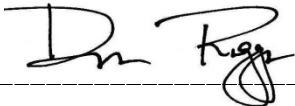
$$Q_{GCL} = 1.47 \times 10^{-7} \frac{cm}{sec}$$

Leachate flux through compacted clay liner

$$Q_{clay} = \left(1 \times 10^{-7} \frac{cm}{sec}\right) \left(\frac{1ft + 2ft}{2ft}\right)$$

$$Q_{clay} = 1.50 \times 10^{-7} \frac{cm}{sec}$$

$Q_{GCL} < Q_{clay} \quad \therefore$ GCL results in less leachate flux through the liner than compacted clay.

Signature: _____

Daniel J. Riggs, PE

License No. 49559

Appendix G

Method 1030

IGNITABILITY OF SOLIDS

SW-846 is not intended to be an analytical training manual. Therefore, method procedures are written based on the assumption that they will be performed by analysts who are formally trained in at least the basic principles of chemical analysis and in the use of the subject technology.

In addition, SW-846 methods, with the exception of required method use for the analysis of method-defined parameters, are intended to be guidance methods which contain general information on how to perform an analytical procedure or technique, which a laboratory can use as a basic starting point for generating its own detailed standard operating procedure (SOP), either for its own general use or for a specific project application. Performance data included in this method are for guidance purposes only and must not be used as absolute quality control (QC) acceptance criteria for purposes of laboratory QC or accreditation.

1.0 SCOPE AND APPLICATION

1.1 This method is suitable for the determination of the ignitability of solids and is appropriate for pastes, granular materials, solids that can be cut into strips, and powdery substances. Also, if it is impractical to perform this test because of the physical form of the sample, generator knowledge should be used to determine the ignitability hazard posed by the material. The test method described here is based on the test procedure adopted by the Department of Transportation (DOT) from the United Nations regulations for the international transportation of dangerous goods (see Appendix E to Part 173 of 49 CFR).

1.2 This method is not required by the Federal regulations to determine if a waste passes or fails the characteristic of ignitability according to the RCRA regulatory definition at 40 CFR 261.21. To clarify, the test results of this method cannot be used to directly classify a waste as a D001 hazardous waste, nor can the results be used by themselves to definitively classify a waste as non-hazardous. No specific test for ignitable solids is required by the RCRA regulations, and only a waste meeting the narrative regulatory definition at 40 CFR 261.21(a)(2) is an ignitable hazardous waste because it is an ignitable solid. In addition, the test in this method for a liquid may be helpful in determining whether a liquid waste has hazardous properties; however, a liquid waste is only a D001 hazardous waste if it is an oxidizer, as defined at 40 CFR 261.21(a)(4), or based on its flash point, as defined at 40 CFR 261.21(a)(1). This test method was developed to specifically illustrate the ignitability properties of materials, including wastes, and its results provide relevant and useful information that may be applied to knowledge of a waste in determining whether a waste meets the 40 CFR 261.21 criteria.

1.3 Prior to employing this method, analysts should consult the disclaimer statement at the front of the manual and the information in Chapter Two for 1) guidance on the intended flexibility in the choice of methods, apparatus, materials, reagents, and supplies; and 2) the responsibilities of the analyst for demonstrating that the techniques employed are appropriate for the analytes of interest, in the matrix of interest, and at the levels of concern.

In addition, analysts and data users are advised that, except where explicitly specified in a regulation, the use of SW-846 methods is *not* mandatory in response to Federal testing requirements. The information contained in this method is provided by the Environmental Protection Agency (EPA) as guidance to be used by the analyst and the regulated community in

making judgments necessary to generate results that meet the data quality objectives (DQOs) for the intended application.

1.4 This method is restricted to use by, or under supervision of, appropriately experienced and trained personnel. Each analyst must demonstrate the ability to generate acceptable results with this method.

2.0 SUMMARY OF METHOD

In a preliminary test, the test material is formed into an unbroken strip or powder train, 250 mm in length. An ignition source is applied to one end of the test material to determine whether combustion will propagate along 200 mm of the strip within a specified time period. Materials that propagate burning along a 200-mm strip within the specified time period are then subjected to a burning rate test. Materials that do not ignite or propagate combustion as described above do not require further testing. In the burning rate test, the burning time is measured over a distance of 100 mm and the rate of burning is determined. The test method described here is based on the test procedure adopted by the Department of Transportation from the United Nations regulations for the international transportation of dangerous goods and is contained in Appendix E to Part 173 of 49 CFR.

3.0 DEFINITIONS

Refer to Chapter One and the manufacturer's instructions for definitions that may be relevant to this procedure.

4.0 INTERFERENCES

4.1 In laboratory tests, the burning rate of duplicate runs is usually repeatable to within 10%. However, large differences in burning rates may occur if experimental conditions are not held constant. Variation in airflow rates, particle size, and moisture content of the test material will affect test results. Therefore, at least triplicate determinations of the burning rate should be conducted.

4.2 Particle size of test material can affect not only the burning rate, but also the ignition of the material. Therefore, the particle size of the test material should be the same for each test run. The particle size of the test material should be reported in a simple descriptive format (e.g., fine powder, sand, coarse granular).

4.3 Temperature of some test material (such as sulfur powder) affects the burning rate. For reproducible results, all tests should be performed at approximately the same initial temperature (ambient room or laboratory temperature).

4.4 All tests must be carried out inside a fume hood with the test apparatus situated perpendicular (90°) to the direction of airflow. Airflow parallel (0°) to the test apparatus results in non-reproducible burning rates.

4.5 The rate of airflow through the fume hood affects the burning rate. An airflow rate that is too high distorts the flame and retards its horizontal propagation. The optimum airflow rate appears to be in the range of 0.7-1 meters per second.

4.6 Materials that are moisture sensitive (i.e., readily absorb moisture from air) should be tested as quickly as possible after removal from the sample container. All materials should be tested as received by the laboratory.

5.0 SAFETY

5.1 This method does not address all safety issues associated with its use. The laboratory is responsible for maintaining a safe work environment and a current awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A reference file of material safety data sheets (MSDSs) should be available to all personnel involved in these analyses.

5.2 Prior to starting the preliminary screening test, all sample materials must be tested to determine if that material is explosive or extremely flammable (see WARNING below). Use a very small portion of material (1 g or less) for this test.

WARNING: If the sample material is explosive or extremely flammable, do not conduct this test.

5.3 This method could involve the combustion of highly flammable materials and the generation of toxic fumes. All tests must be conducted in a suitable fume hood fitted with a pull-down sash to prevent the escape of toxic fumes into working areas. The analyst should wear appropriate protective clothing, including a laboratory jacket or apron, safety glasses, and protective gloves. The laboratory should have appropriate firefighting equipment (such as a Class A fire extinguisher) readily available to extinguish small fires.

6.0 EQUIPMENT AND SUPPLIES

The mention of trade names or commercial products in this manual is for illustrative purposes only, and does not constitute an EPA endorsement or exclusive recommendation for use. The products and instrument settings cited in SW-846 methods represent those products and settings used during method development or subsequently evaluated by the Agency. Glassware, reagents, supplies, equipment, and settings other than those listed in this manual may be employed provided that method performance appropriate for the intended application has been demonstrated and documented.

This section does not list common laboratory glassware (e.g., beakers and flasks) that might be used.

6.1 Low-heat conducting, non-combustible, impervious ceramic tile or equivalent material, an approximate dimension of 25 cm x 25 cm x 2.5 cm (the tile must be at least 25 cm in length to support a 250-mm test sample).

6.2 High temperature marker or equivalent marking device for marking ceramic plates.

6.3 Powder train mold (see Figure 1) for molding powdered and granular materials for the burn rate test. The material of construction can be aluminum, brass, stainless steel, or plastic. The mold is 250 mm in length and has a triangular cross-section, with a width of 20 mm, and a depth of 10 mm as measured from the bottom of the triangular opening to where the sides meet. On both sides of the mold, in the longitudinal direction, two sheets are mounted as lateral limitations which extend 2 mm beyond the upper edge of the triangular cross-section.

This device can be fabricated by most machine shops. The complete burn rate apparatus is available from: Associated Design and Manufacturing Co., Lorton, Virginia, 22079.

6.4 A Bunsen (propane gas and air) burner with a minimum diameter of 5 mm capable of attaining a temperature of at least 1,000 °C.

6.5 Stop watch.

6.6 Thermocouple to measure the temperature of the gas flame.

6.7 Thermometer to measure initial temperature of material (i.e., room temperature).

6.8 Anemometer to measure airflow in the fume hood.

7.0 REAGENTS AND STANDARDS

No special reagents or standards are required to conduct this test.

8.0 SAMPLE COLLECTION, PRESERVATION, AND STORAGE

8.1 Samples should be tested on an as-received basis unless requested otherwise. No sample preservation is required, but sample containers should be completely filled and tightly sealed to preserve sample integrity.

8.2 Samples should be tested as soon as possible after removal from the sample container (i.e., samples should not be allowed to dry or absorb moisture for excessive periods or to lose volatiles). Samples that are chilled or cooled upon receipt to the laboratory should be allowed to equilibrate to the ambient laboratory temperature in the sample container.

9.0 QUALITY CONTROL

9.1 Refer to Chapter One for additional guidance on quality assurance (QA) and quality control (QC) protocols. When inconsistencies exist between QC guidelines, method specific QC criteria take precedence over both technique specific criteria and Chapter One criteria; technique specific QC criteria take precedence over Chapter One criteria. Any effort involving the collection of analytical data should include development of a structured and systematic planning document, such as a Quality Assurance Project Plan (QAPP) or a Sampling and Analysis Plan (SAP), which translates project objectives and specifications into directions for those implementing the project and assessing the results.

Each laboratory should maintain a formal quality assurance program. The laboratory should also maintain records to document the quality of the data generated. Development of in-house QC limits for each method is encouraged. Use of instrument specific QC limits is encouraged, provided such limits will generate data appropriate for use in the intended application. All data sheets and quality control data should be maintained for reference or inspection.

9.2 All tests must be performed on a clean ceramic plate at room temperature.

9.3 All replicate runs must be at the same initial temperature (ambient laboratory temperature).

9.4 All replicate tests must be run at approximately the same airflow through the fume hood.

9.5 Only materials of the same particle size distribution should be used for all replicate tests.

9.6 The burn rate test must be conducted in triplicate if the preliminary screening test is positive. Any burn rate for non-metallic samples that exceeds 2.2 mm/sec (or a burn time of less than 45 seconds for 100 mm) is considered to have a positive result. For metals, a burn rate of more than 0.17 mm/sec (or burn time of less than 10 minutes for 100 mm) is considered to have a positive result.

10.0 CALIBRATION AND STANDARDIZATION

There are no calibration or standardization steps directly associated with this procedure. See the equipment manufacturer's instructions for the calibration of certain equipment used in this method (e.g., the thermocouple).

11.0 PROCEDURE

WARNING: Prior to starting the preliminary screening test, all sample materials must be tested to determine if that material is explosive or extremely flammable. Use a very small portion of material (1 g or less). If the sample material is explosive or extremely flammable, do not conduct this test.

11.1 Preliminary screening test

11.1.1 The preliminary screening test for ignitability is conducted on all waste materials. On a clean, impervious ceramic tile (Sec. 6.1), clearly mark a 250 mm long test path. Make another mark at exactly 200 mm from the start of the sample path.

11.1.2 Prepare the test material in its "as received" form by forming an unbroken strip or powder train of sample 250 mm long by 20 mm wide by 10 mm high on the ceramic tile. Use the mold to form the material as described in Sec. 11.2.3.1, if appropriate.

11.1.3 Place the ceramic tile with the loaded sample in a fume hood about 20 cm (~8 inches) from the front of the hood and in an area of laminar airflow. Position the sample perpendicular to the airflow (See Figure 2). The airflow across the perpendicular axis of the sample should be sufficient to prevent fumes from escaping into the laboratory and should not be varied during the test. The air velocity should be approximately 0.7 meters/second. Measure the air velocity with an anemometer.

11.1.4 Light the Bunsen burner and adjust the height of the flame (6.5 to 7.5 cm) by adjusting the propane gas and air flows. Measure the temperature of the flame (tip of the flame) by a thermocouple. The temperature of the flame must be at least 1000 °C.

11.1.5 Apply the tip of the flame to one end of the sample strip. The test period will depend on the sample matrix (whether non-metallic or metallic) as described below in Sec. 11.1.5.1 and 11.1.5.2.

11.1.5.1 If the waste is non-metallic, hold the flame tip on the sample strip until the sample ignites or for a maximum of 2 minutes. If combustion occurs, begin timing with a stop watch and note whether the combustion propagates up to the 200 mm mark within the 2 minute test period.

11.1.5.2 If the waste is a metal or metal alloy powder, hold the flame tip on the sample strip until the sample ignites or for a maximum of 5 minutes. If combustion occurs, begin timing with a stop watch and note whether the combustion propagates up to the 200-mm mark within the 20 minute test period.

11.1.6 If the waste does not ignite and propagate combustion either by burning with open flame or by smoldering along the 200-mm sample strip within the 2 minute test period (or 20 minute test period for metal powders), the waste is not considered flammable and no further testing is required. If the waste propagates burning of 200 mm of the test strip within the 2 minute test period (20 minute test period for metals), the material must be evaluated by the burning rate test (proceed to Sec. 11.2).

11.2 Burning rate test

11.2.1 The preparation of the test sample for the burning rate test will depend on the physical characteristics of the waste. Wastes that exist in a powdered or granular state are molded in a powder train mold as shown in Figure 1. Pasty materials are formed into a rope that is 250 mm in length with a cross-section of 1 cm². All tests for the burn rate test are performed on clean, ambient temperature, ceramic plates.

11.2.2 On a clean, impervious ceramic tile (Sec. 6.2), clearly mark a 250-mm long test path. Make two additional timing marks at 80 mm and 180 mm from the start of the sample path. The distance between the two marks (100 mm) will be used to calculate the rate of burn in Sec. 12.0.

11.2.3 Sample preparation based on physical characteristics

11.2.3.1 Powder or granular material -- Tighten the side plates on the mold. Place the mold on the base plate. Pour the material to fill the triangular cross section of the mold loosely. Drop the unit from a height of 2 cm onto a solid surface three times to settle the powder. Remove the side supports. Lift the mold off the base plate. Place a clean ceramic test plate with the appropriate timing marks (Sec. 11.2.2) face down on top of the mold. Invert the setup and remove the mold.

11.2.3.2 Pasty wastes - Spread the waste on a marked ceramic tile (Sec. 11.2.2) in the form of a rope 250 mm in length with a cross-section of 1 cm².

11.2.4 Place the ceramic tile with the loaded sample prepared in Sec. 11.2.3 in a fume hood about 20 cm (~8 in) from the front of the hood and in an area of laminar airflow. Position the sample perpendicular to the airflow (See Figure 2). The airflow across the perpendicular axis of the sample should be sufficient to prevent fumes from escaping into the laboratory and should not be varied during the test. The air velocity should be

approximately in the range of 0.7-1 meters/second. Measure the air velocity with an anemometer.

11.2.5 Light the Bunsen burner and adjust the height of the flame (6.5 to 7.5 cm) by adjusting the propane gas and air flows. Measure the temperature of the flame (tip of the flame) by a thermocouple. The temperature of the flame must be at least 1000 °C.

11.2.6 Apply the tip of the flame to one end of the sample strip to ignite the test strip as described in Sec. 11.1.5.1 or 11.1.5.2 (based on whether the sample is non-metallic or metallic).

11.2.7 When the test strip or powder train has burned up to the 80-mm time marker, begin timing the rate of combustion with a stop watch. Stop the timer when the burned strip reaches the 180-mm time marker. Record the amount of time (in sec) required to burn the 100-mm test strip.

12.0 DATA ANALYSIS AND CALCULATIONS

Calculate the rate of burning by dividing the length of the burn test strip (100 mm) by the total time (sec). Results of the burn rate test should be reported in mm/sec. Wastes that have a rate of burning of more than 2.2 mm/sec (or burn time of less than 45 sec for 100 mm) are considered to have a positive result for ignitability according to DOT regulations. For metals, this time is 10 minutes or less for 100 mm (or a burn rate of more than 0.17 mm/sec). The following format may be used to document the data.

Test Material Information

Source of material (e.g., company, operation or process):

Description of material (e.g., powder or paste, metallic or non-metallic):

Particle size (e.g., fine powder, granular, sand, etc.):

Preliminary burning time (sec):

Test Conditions

Date of Test:

Temperature of test material (°C):

Air velocity through fume hood (m/s):

Ignitability Test Data				
Test Number	Time (sec) Elapsed Between Application of Flame and Start of Ignition	Burning Time over 100 mm (sec)	Burning Rate (mm/sec)	Comments
1				
2				
3				

13.0 METHOD PERFORMANCE

13.1 Performance data and related information are provided in SW-846 methods only as examples and guidance. The data does not represent required performance criteria for users of the methods. Instead, performance criteria should be developed on a project-specific basis, and the laboratory should establish in-house QC performance criteria for the application of this method. Performance data must not be used as absolute QC acceptance criteria for laboratory QC or accreditation.

13.2 An independent laboratory validation was conducted on the robustness of the burn rate test procedure. The materials selected for this evaluation included:

1. A 50/50 mixture of metallic silicon and lead dioxide (PbO_2)
2. Excelsior
3. Dextrin (yellow powder)
4. Sulfur (fine yellow powder)
5. Aluminum metal (coarse)
6. Magnesium metal (coarse)
7. Polyethylene high density (granular)
8. Polyethylene low density (fluffy white powder)
9. Scott fertilizer (32-3-10:N-P-K)
10. JP-4 contaminated soil (approximately 5000 ppm)

Of these materials, the 50/50 mixture of metallic silicon and lead dioxide (PbO_2), elemental sulfur, and excelsior gave a positive ignitability result under the conditions of the test. The remaining materials gave negative (nonflammable) results under the conditions of the test. Several test variables including: ignition source, ambient temperature, and apparatus orientation, were studied using these materials. Partial results of this study are summarized in Table 1. These data are provided for guidance purposes only.

13.3 In another evaluation of the DOT burn rate test, potentially ignitable finishing wastes from the furniture industry were collected and tested for burning rates. Each waste was tested in triplicate to establish a mean value for the burning rate. The results for the flammable wastes are summarized in Table 2. These data are provided for guidance purposes only.

13.4 In order to evaluate the ruggedness of the DOT burn rate test, select ignitable finishing wastes were split and tested by a state laboratory and an independent contract laboratory. The results of this comparison are summarized in Table 3. These data are provided for guidance purposes only.

14.0 POLLUTION PREVENTION

14.1 Pollution prevention encompasses any technique that reduces or eliminates the quantity and/or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operations. The EPA has established a preferred hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the Agency recommends recycling as the next best option.

14.2 For information about pollution prevention that may be applicable to laboratories and research institutions consult *Less is Better: Laboratory Chemical Management for Waste Reduction*, a free publication available from the American Chemical Society (ACS), Committee on Chemical Safety,
http://portal.acs.org/portal/fileFetch/C/WPCP_012290/pdf/WPCP_012290.pdf.

15.0 WASTE MANAGEMENT

The Environmental Protection Agency requires that laboratory waste management practices be conducted consistent with all applicable rules and regulations. Laboratories are urged to protect air, water, and land by minimizing and controlling all releases from hoods and bench operations, complying with the letter and spirit of any sewer discharge permits and regulations, and by complying with all solid and hazardous waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on laboratory waste management, consult *The Waste Management Manual for Laboratory Personnel* available from the American Chemical Society at the address listed in Sec. 14.2.

16.0 REFERENCES

1. "Test Methods for Readily Combustible Solids. Burning Rate Test." (14.2.2.5). Recommendations on the Transport of Dangerous Goods, Fifth Revised Edition, United Nations, New York, 1988.
2. 49 CFR, Appendix E to Part 173 (12-31-91 Edition), pp. 597-598.
3. "Flammability (solids). Method A.10," Official Journal of the European Communities, No. L251/63, September 19, 1984.
4. Foster Wheeler Enviresponse, Inc., Edison NJ., "Validation of Ignitability Method For Solids," submitted to the Office of Solid Waste, US EPA, February 1994.
5. Internal Report (AMFA Report), North Carolina Department of Environmental Health and Natural Resources (Bill Hamner).

17.0 TABLES, DIAGRAMS, FLOW CHARTS, AND VALIDATION DATA

The following pages contain the tables and figures referenced by this method. A flow diagram of the procedure is included after the figures.

TABLE 1
TEST VARIABLES FOR IGNITABILITY

Material Tested	Test Number	Variable combination ¹	Burn Time over 100 mm (sec)	Burn Rate (mm/sec)
50% Metallic Silicon and 50% Lead IV Oxide	1	ABC	0.84	119
	2	Abc	0.50	200
	3	aBc	0.69	145
	4	abC	0.65	154
Excelsior (wood shavings)	1	ABC	13.45	7.43
	2	Abc	9.14	10.9
	3	aBc	13.37	7.47
	4	abC	13.59	7.36

¹Key:

A - Flame ignition

a - Hot wire ignition source

B - Ambient temperature of 20 ° C

b - Ambient temperature of 100 ° C

C - Orientation of test apparatus of 90 ° to air flow

c - Orientation of test apparatus of 0 ° to air flow

These data are provided for guidance purposes only.

TABLE 2
EXAMPLE BURNING RATES FOR IGNITABLE WASTES

Sample No.	Description of Waste	Burn Time over 100 mm (sec)	Burn Rate (mm/sec)
A2	Segregated Lacquer Dust	4.7	21.3
J2	Segregated Lacquer Dust	4.6	21.7
U	Segregated Lacquer Dust	8.6	11.6
K	Consolidated Lacquer Dust	6.0	16.7
H	Catalyzed Lacquer Dust	6.7	14.9
F	Water Based Lacquer Dust	19.4	5.15
P	Booth Coat-Stain Overspray	12.5	8.0
O	Pallet Covered Cardboard	11.1	9.0
Q	Pallet Covered Cardboard	12.3	8.13

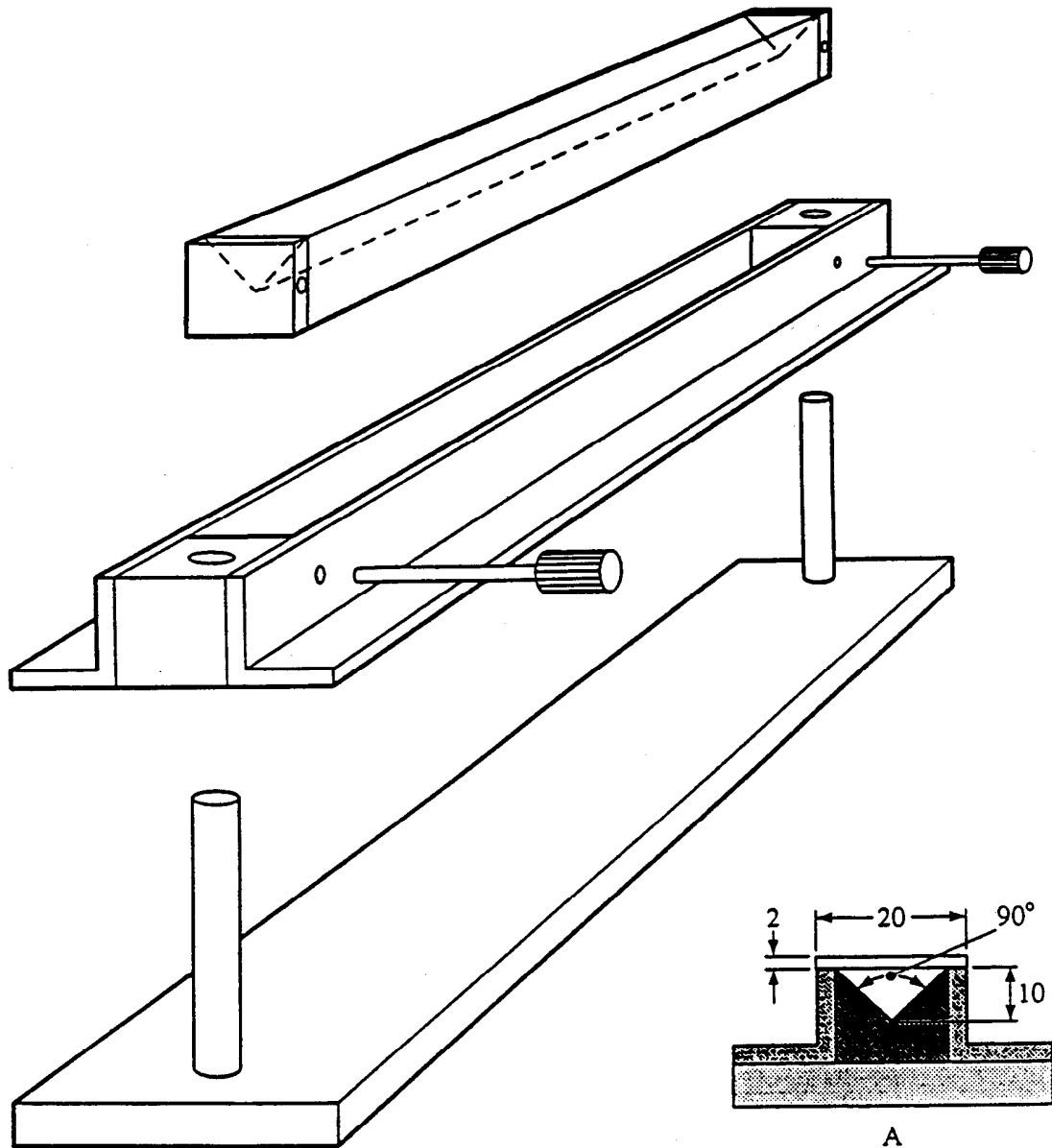
These data are provided for guidance purposes only.

TABLE 3
EXAMPLE COMPARISON OF BURN RATES

Sample No.	Description of Waste	Mean Burn Time Over 100 mm (Seconds)	
		State Laboratory	Contract Laboratory
A1	Segregated Lacquer Dust	4.7	5
J1	Segregated Lacquer Dust	4.6	4.3
12	Booth Coat-Glaze Overspray	0 ¹	0 ¹

¹ Waste was found to be nonflammable under conditions of the test.
These data are provided for guidance purposes only.

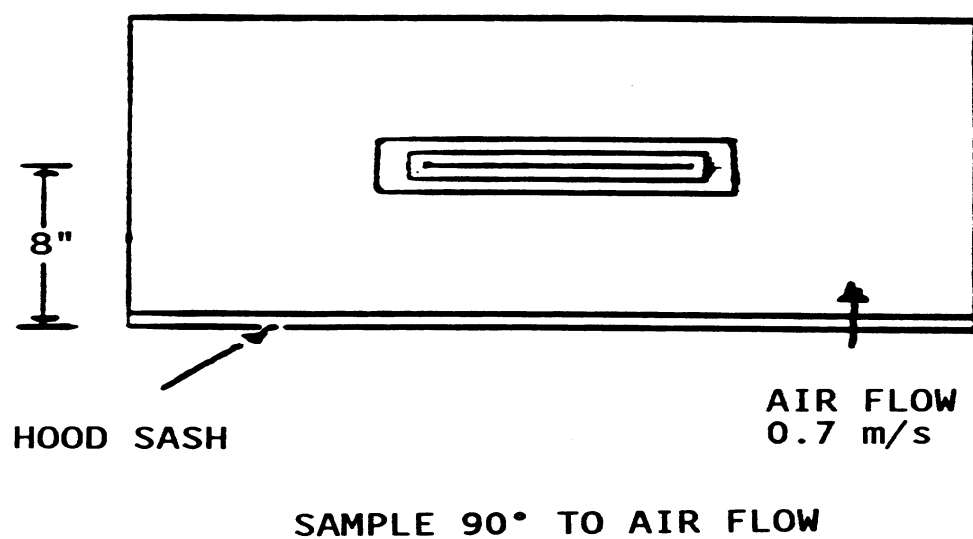
FIGURE 1
POWDER TRAIN MOLD



(A) Cross-section of 250 mm long mould

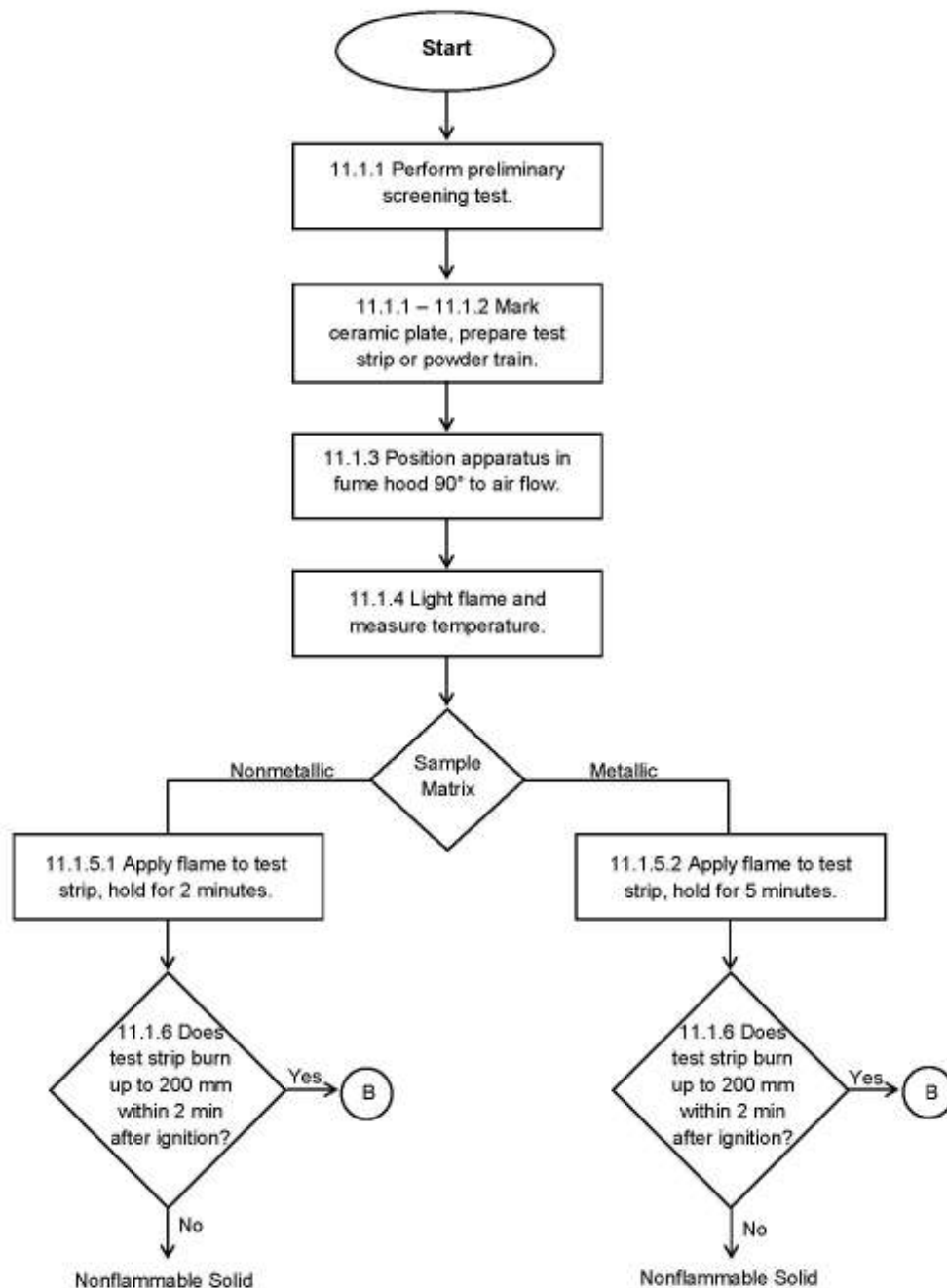
FIGURE 2

TEST APPARATUS POSITION IN FUME HOOD

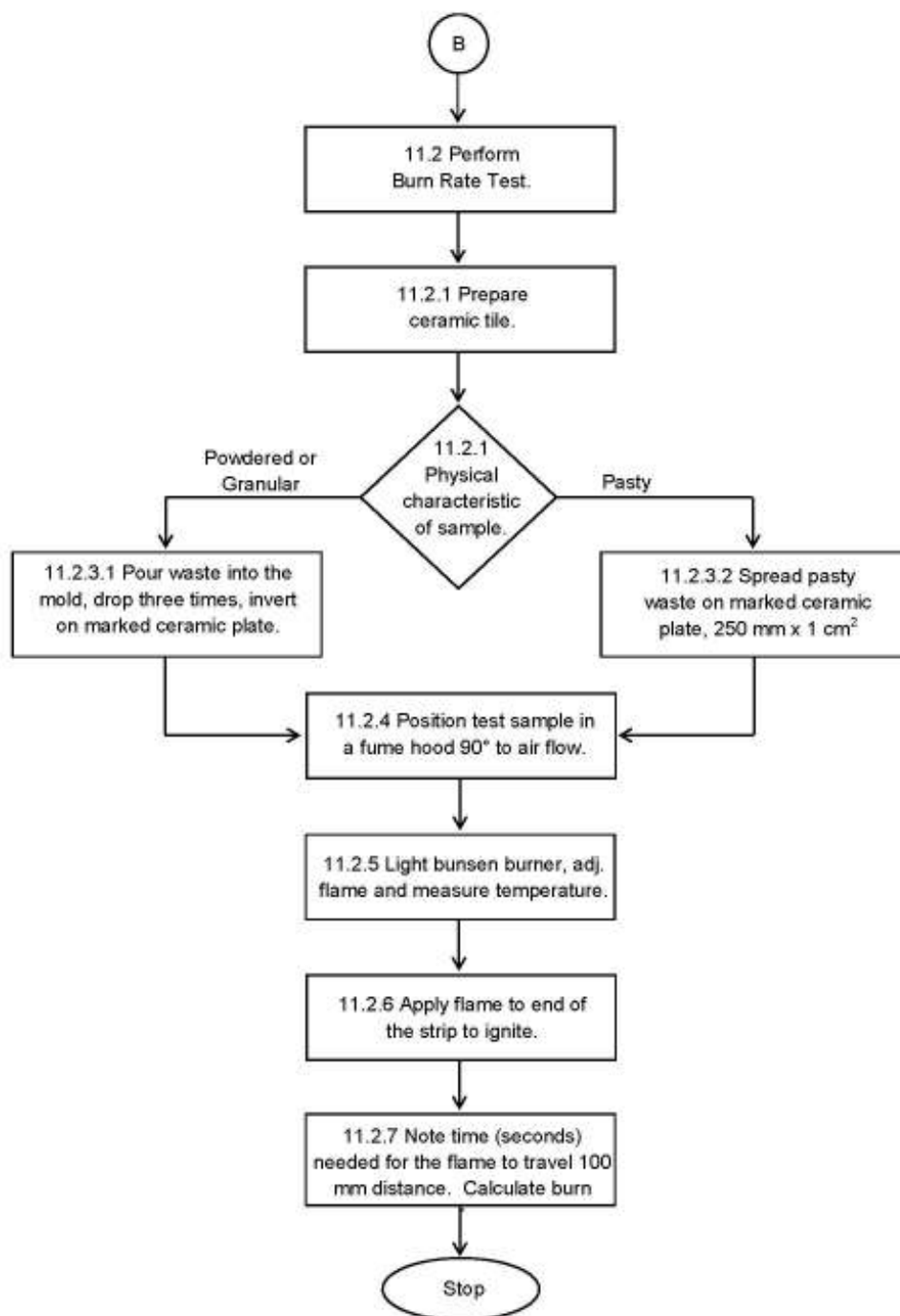


METHOD 1030

IGNITABILITY OF SOLIDS



METHOD 1030 (Continued)



Appendix A:

Summary of Revisions to Method 1030 (From Revision 0 December 1996)

1. Improved overall method formatting for consistency with new SW-846 methods style guidance. The format was updated to Microsoft Word .docx.
2. Minor editorial and technical revisions were made throughout to improve method clarity.
3. The flowcharts on pages 14 and 15 were updated to improve visual clarity and edited for content.
4. The revision number was changed to 1 and the date published was changed to July 2014.
5. This appendix was added showing changes from the previous revision.
6. Items regarding regulatory use of this method in Sec. 1.1 and 1.2 were updated to reflect current guidance.

Appendix H

MPCA Guidance Document – The Lethality Characteristic



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The Lethality Characteristic

A Minnesota-specific hazardous-waste characteristic

Waste/Hazardous Waste #2.05 • May 2009

Lethality, a hazardous waste characteristic specific to Minnesota, considers the toxicological, or poisonous, effect of a waste. Minnesota waste generators must ensure that wastes are evaluated for the Lethality characteristic as well as for the federal characteristics of Ignitability, Oxidizers, Corrosivity, Reactivity, and Toxicity. While the more familiar characteristic of Toxicity also contains the root 'toxic,' that characteristic refers to the presence and concentration of specific toxic contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). The Lethality characteristic is concerned with the overall toxicological effect of the waste as determined by biological testing. In this document, wastes displaying the Lethality characteristic are termed 'Lethal.'

Seek ways to reduce the total amount of waste you generate and the toxicity of the products you use to reduce the amount of potentially lethal hazardous wastes you generate. For free assistance, contact the Minnesota Technical Assistance Program (MnTAP). Contact information on page 4.

For more information on the federal characteristics, see MPCA hazardous waste fact sheet #2.04, *Characteristic Wastes*, available at www.pca.state.mn.us/publications/w-hw2-04.pdf

Lethality thresholds

The toxicological effect of a material is often measured in terms of the median lethal dose (LD₅₀), which is the amount of a material which will kill half of a test population of a specific animal, presented

as a ratio with the body weight of the animal. Median lethal dose information is determined for a specific exposure method and test animal. The Lethality characteristic considers the oral, dermal, and inhalation exposure methods. The median lethal dose for the inhalation exposure is commonly referred to as the median lethal concentration (LC₅₀).

Under Minnesota Rules, a waste is hazardous for the Lethality characteristic when a representative sample of the waste exhibits any of the following:

- an oral LD₅₀ (rat) less than 500 milligrams per kilogram (mg/kg)
- a dermal LD₅₀ (rabbit) less than 1000mg/kg
- an inhalation LC₅₀ (rat) less than 2000 milligrams per cubic meter (mg/m³) for dusts and mists
- an inhalation LC₅₀ (rat) less than 1000 parts per million (ppm) for gases and vapors

Evaluating for lethality

To help you evaluate waste for the Lethality characteristic, the Minnesota Pollution Control Agency (MPCA) has compiled a list of attributes that indicate a waste may be Lethal. See Table 1.

You may consider a waste does *not* meet the Lethality characteristic when you can document that the product from which the waste is generated does not display any of the Table 1 attributes. Maintain documentation at the generation site.

If a product *does* display any of the attributes, the waste *may* be Lethal; you must evaluate it further. Manage waste that

displays any of the attributes as a Lethality characteristic hazardous waste unless and until you evaluate further under Minn. R. 7045.0131, Subp. 6 and demonstrate that the waste does not display the Lethality characteristic.

Instead of performing a full evaluation, you may choose to assume a waste is lethal and manage it as fully regulated hazardous waste

Table 1: Attributes of potential lethality

- | | |
|--|---|
| <ul style="list-style-type: none"> • A drug* regulated by the Minnesota Board of Pharmacy | |
| <ul style="list-style-type: none"> • A pesticide regulated by the Minnesota Department of Agriculture | |
| <ul style="list-style-type: none"> • A poisonous material regulated for transport by the U.S. Department of Transportation | |
| <ul style="list-style-type: none"> • A material bearing any of the descriptive or signal terms “Poison”, “Poisonous”, “Toxic”, “Lethal”, “Fatal” or “Deadly” on the product shipping container, product label, or in product documentation | |
| <ul style="list-style-type: none"> • A material bearing the ‘skull and crossbones’ graphic on the product shipping container, product label, or in product documentation |  |
| <ul style="list-style-type: none"> • A material bearing a U.S. Department of Transportation “Hazard Class 6.1” label or placard on the product shipping container, product label, or in product documentation |    |
| <ul style="list-style-type: none"> • A material bearing a National Fire Rating (NFR), Hazardous Materials Identification System (HMIS), or Hazardous Material Identification/Information Guide (HMIG) rating Health Division ≥3 or Special Hazard Division “POI” (NFR only) label on the product shipping container, product label, or in product documentation |   
    |
| <ul style="list-style-type: none"> • A material bearing LD₅₀ data on a Material Safety Data Sheet (MSDS) which you have, or which you are required by OSHA regulations to have, which states that the LD₅₀ of any of the ingredients is less than the lethality thresholds on page 1 of this fact sheet | |
| <ul style="list-style-type: none"> • A material having specific information known to you that the waste may reasonably be Lethal, including but not limited to information that your processes may alter a product or other material which does not exhibit any of the above attributes in such a way that the waste generated may reasonably be Lethal | |
| <ul style="list-style-type: none"> • A material having specific information published by the MPCA in Table 2 of this fact sheet that the waste may reasonably be Lethal | |

Wastes which display no attributes may be considered non-Lethal.

Wastes which display one or more attributes may be Lethal and must be evaluated further.

*A 'drug' as specified in Table 1 above is considered by the MPCA to be a 'pharmaceutical' eligible for further evaluation for lethality under an approved Petition for the *“Alternate Method to Evaluate Pharmaceutical Waste for the Lethality Characteristic”* if you have such an approved Petition. For more information on the Alternate Method, see MPCA hazardous waste fact sheet #4.45b, *Alternate Method to Evaluate Pharmaceutical Waste for the Lethality Characteristic*, available at www.pca.state.mn.us/publications/w-hw4-45b.pdf

Further evaluation for lethality

Further evaluation of a waste for the Lethality characteristic may include calculating the estimated LD₅₀ of the waste or applying specific and documented knowledge of materials and processes used in the generation of the waste. If you evaluate the waste further and can demonstrate that it does not meet the Lethality characteristic as identified in Minn. R. 7045.0131, Subp. 6, you may manage the waste as non-Lethality characteristic without further action on your part.

Note: A waste that is not hazardous due to the Lethality characteristic may be hazardous for other reasons. Always perform a complete evaluation.

Calculating the estimated LD₅₀ of a waste

To calculate the estimated LD₅₀ of a waste, you must have the appropriate LD₅₀ data for all of the waste components that reasonably may produce a toxic effect. The LD₅₀ data you use must be for the correct exposure method and test animal. You may exclude ingredients that reasonably will not produce a harmful toxicological effect. If your reference material gives a range for the % concentration of an ingredient, you must use the maximum range value in your calculation.

Note: Ingredients identified as ‘inert’ on product labels, such as propellants, solvents, and carriers, may *not* be assumed to produce no harmful toxicological effect. Many product labels identify these ingredients as ‘inert’ only because they do not perform the main function of the product. However, many of these ‘inert’ ingredients, such as petroleum-based solvents, may have significant harmful toxicological effects and must be included in your LD₅₀ calculation.

To calculate the estimated LD₅₀ of the waste, use the following formula:

$$\frac{1}{T_W} = \frac{1}{100} \times \left(\frac{C_A}{T_A} + \frac{C_B}{T_B} + \frac{C_C}{T_C} \right)$$

T_W = LD₅₀ of the waste

$T_{A,B,...,Z}$ = LD₅₀ of ingredient A, B, ...Z in the waste

$C_{A,B,...,Z}$ = % concentration of ingredient A, B, ...Z in the waste

Note: The total % concentrations of ingredients A, B, ...Z you use in your calculation may be less than 100% if the remainder of the waste will not produce a harmful toxicological effect.

Applying specific knowledge to determine the lethality of a waste

As an alternative to calculating the estimated LD₅₀ of a waste, you may apply specific and documented knowledge of the materials and processes used in generating the waste. If the waste is an unaltered discarded product, you must determine whether the product would reasonably meet the Lethality characteristic when disposed of. Certifications or informed statements by a product manufacturer that a waste is “non-toxic” or “practically non-toxic” to humans or mammals may constitute knowledge that the waste is reasonably non-Lethal.

If you are able to locate some toxicological information but are unable to calculate the estimated LD₅₀ of the waste, you may still be able to use the available data to evaluate the waste for the Lethality characteristic. As an example, if the only LD₅₀ data you are able to locate is for an exposure method other than the one you are considering, or if the test animal is different than the required animal for the exposure method you are considering, you may apply accepted principles of biochemistry, toxicology, and physiology to the LD₅₀ data you do have to determine whether the waste would reasonably be Lethal.

Note: You may not use information that a product is certified for a specific use by a governmental agency, such as the U.S. Food and Drug Administration (FDA), U.S. Environmental Protection Agency (EPA) or other similar Federal or state agency, as evidence that the product is non-Lethal when disposed of unless the certified use by its nature and lack of limitation shows that the product would reasonably be non-Lethal. As an example, you may not use approval for limited medical use of a pharmaceutical by the FDA as evidence that the waste pharmaceutical is non-Lethal; however, the approval for unlimited food use of an additive would reasonably indicate the additive waste is non-Lethal.

When sufficient information and knowledge are not available to determine lethality

When, after exercising due diligence, you are unable to locate sufficient information and knowledge to determine whether a waste displays the Lethality characteristic, you may either simply manage the waste as a Lethal hazardous waste or notify the MPCA in writing. The MPCA may require specific additional evaluation to reasonably determine whether the waste may be managed as non-Lethal.

Specific published lethality information

Table 2 lists specific lethality information currently known to the MPCA for wastes which may not exhibit any of the other attributes from Table 1, with the approximate lethality threshold concentrations for the

oral exposure method for each waste. This table does not list all known or potentially Lethal wastes, only those which the MPCA believes may otherwise not be identified and of which it has specific knowledge.

Table 2: Specific known lethality information

Waste name	CAS registry number	Approximate lethality threshold concentration
Beryllium	7440-41-7	2%
Formaldehyde	50-00-0	20%
Glutaraldehyde	111-30-8	27%
Perfluorobutanesulfonate (PFBS)	29420-49-3	86%
Perfluorodecanoic acid (PFDA)	335-76-2	11%
Perfluorooctanesulfonate (PFOS)	1763-23-1	50%
Perfluorooctanesulfonylamide (FOSA or PFOSA)	754-91-6	34%
Perfluorooctanoic acid (PFOA)	3825-26-1	50%

More information

The MPCA, in cooperation with metropolitan county hazardous waste staff, Minnesota Technical Assistance Program (MnTAP) staff and other partners have developed guidance materials about the hazardous waste regulations available on MPCA's Web site at www.pca.state.mn.us/waste/pubs/business.html

The MPCA and your metropolitan county hazardous waste offices have staff that can help you. Contact your metropolitan county or the MPCA office nearest your facility at the numbers below. MnTAP staff can provide information and resources to help you reduce waste.

Metro County Hazardous Waste Offices

Anoka County 763-422-7093
Carver County 952-361-1800
Dakota County 952-891-7557
Hennepin County 612-348-3777
Ramsey County 651-266-1199
Scott County 952-496-8475
Washington County 651-430-6655
Web sites..... [www.co.\[county\].mn.us](http://www.co.[county].mn.us)

Minnesota Pollution Control Agency

Toll free (all offices) 1-800-657-3864
Brainerd.....218-828-2492
Detroit Lakes.....218-847-1519
Duluth..... 218-723-4660
Mankato..... 507-389-5977
Marshall..... 507-537-7146
Rochester.....507-285-7343
St. Paul 651-296-6300
Willmar 320-214-3786
Web site..... www.pca.state.mn.us

Minnesota Technical Assistance Program

Toll-free..... 1-800-247-0015
Minneapolis.....612-624-1300
Web site www.mntap.umn.edu

Appendix I

MPCA Guidance Document – Managing Sealants and Coatings Containing PCBs



Managing Sealants and Coatings Containing PCBs

Guidance for building owners and contractors

What are PCBs?

Polychlorinated biphenyls (PCBs) are a class of 209 toxic man-made chemicals that persist in the environment and bioaccumulate in animals and humans. They were used extensively in many industrial products from the 1950's through 1978. During this period, PCBs were added to some sealants and coatings such as paint and caulking to make them more flexible and last longer. Exposure to PCBs can cause a range of human health effects and environmental impacts. For more information on other potentially PCB-containing materials and how to test for PCBs, visit the Minnesota Pollution Control Agency (MPCA) at <http://www.pca.state.mn.us/publications/w-hw4-48a.pdf> to view hazardous waste fact sheet #w-hw4-48a, [Identifying, Using, and Managing PCBs](#).

Where are sealants and coatings that may contain PCBs located?

PCBs were used as plasticizers in many industrial paints and are most commonly found in areas that required waterproof or high-impact coatings. Caulking commonly surrounds doors and windows and often was used in masonry work; it also may have been used in repairs throughout a structure. You will not be able to determine whether building materials contain PCBs by their appearance, brand, or manufacturer. Deliberate use of PCBs ended in 1978; you may assume structures or portions of structures built after 1979 do not have sealants or coatings deliberately containing PCBs.

When are sealants and coatings that may contain PCBs regulated?

Sealants and coatings that may contain PCBs are not regulated by the MPCA when they are in good condition and will remain in place in part of a structure that will not be demolished or renovated. The U.S. Environmental Protection Agency (EPA), however, has raised concerns regarding indoor airborne exposure to building materials containing PCBs. For more information on PCB exposure and indoor air quality, see EPA Publication #EPA-747-F-09-005, *Preventing Exposure to PCBs in Caulking Material*, available from the EPA website at <http://www.epa.gov>.

Sealants and coatings that may contain PCBs become regulated by the MPCA as wastes when they are disposed of, either with a structure, such as during a full or partial building demolition, or after they are separated from the structure, such as during an abatement project. Different requirements apply to wastes in these two categories that potentially contain PCBs.

Demolition debris that may contain PCBs

The MPCA will allow, without testing, disposal of demolition debris that may contain PCBs in sealants and coatings, including mastics, sealers, waxes, and manufactured rubber and plastic components in any solid waste landfill permitted by the MPCA or another state, including a demolition, municipal solid waste, and industrial solid waste landfill. Demolition debris contaminated by these wastes may also be disposed in a permitted landfill. However, landfill operators may refuse any waste regardless of MPCA allowances.

If the structure you will demolish or renovate is located in one of the Metropolitan Counties – Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, or Washington – contact your county to determine the county requirements applicable to debris from the structure.

Note: Before demolishing all or part of a structure, in addition to removing other problem materials, you must also remove all separable components that may contain PCBs, including fluorescent and high-intensity discharge (HID) lighting ballasts, motor start capacitors, and electrical transmission or distribution equipment, such as transformers. Manage these wastes as PCB hazardous wastes unless you document they do not contain PCBs at or above 50 parts per million (ppm).

For more information on problem materials that must be removed before demolishing all or part of a structure, visit the MPCA at <http://www.pca.state.mn.us/publications/w-sw4-20.pdf> to view MPCA solid waste fact checklist #w-sw4-20, [Pre-Renovation/Demolition Environmental Checklist](#).

For guidance on managing lighting ballasts and capacitors once you have removed them, see MPCA hazardous waste fact sheet #w-hw4-48f, [Managing PCBs in Ballasts and Small Capacitors](#) at <http://www.pca.state.mn.us/publications/w-hw4-48f.pdf>.

You may reuse uncontaminated recognizable concrete and masonry demolition debris as a substitute for conventional aggregate without MPCA review. Reuse of any debris potentially contaminated with PCBs, including painted or oil-stained debris, must be approved on a case-by-case basis by the MPCA.

Abatement waste and other separate wastes that may contain PCBs

Sealants or coating wastes from abatement work that may contain PCBs must be managed as a PCB hazardous waste in Minnesota unless you can document they contain less than 50 ppm PCBs. Abatement wastes include removed caulk materials, paint chips, and sandblasting debris. For information on storing and disposing of PCB hazardous waste generated in Minnesota, see MPCA hazardous waste fact sheets #w-hw4-48c, [Storing PCBs](#), at <http://www.pca.state.mn.us/publications/w-hw4-48c.pdf> and #w-hw4-48d, [Manifest and Dispose of PCBs](#), at <http://www.pca.state.mn.us/publications/w-hw4-48d.pdf>.

Report all PCB hazardous wastes you generate to the MPCA or your metropolitan county.

For more information on other requirements for performing sandblasting or other air-based blasting in Minnesota, see MPCA hazardous waste fact sheet #w-hw4-39a, [Sandblasting and Other Air-based Blasting](#), at <http://www.pca.state.mn.us/publications/w-hw4-39a.pdf>. For more information on other requirements for performing hydroblasting or other water-based blasting in Minnesota, see MPCA hazardous waste fact sheet #w-hw4-39b, [Powerwashing and Other Water-based Blasting](#), at <http://www.pca.state.mn.us/publications/w-hw4-39b.pdf>.

Structures to be burned for live burn firefighter training

In Minnesota no structure may be burned except for live burn firefighter training. Do not burn any structure for firefighter training until you have collected at least one composite representative sample from each building material in the structure that may contain PCBs and have documented that they do not contain PCBs at 50 ppm or more.

Note: Live burn firefighter training in Minnesota must be conducted according to the *Live Fire Burn Training Procedures* manual prepared by the Minnesota State Colleges and University System and under a burn permit properly obtained from the Minnesota Department of Natural Resources (DNR). You may obtain a copy of the current manual from the DNR at <http://www.dnr.state.mn.us/>.

More information

Guidance and requirements in this fact sheet were compiled from the Code of Federal Regulations, Chapter 40, Part 761, and Minnesota Rules, Chapters 7035 & 7045, and incorporates regulatory interpretation decisions made by the MPCA on February 28, 2013. Visit the U.S. Government Printing Office at <http://www.gpo.gov/fdsys/> to review the Code of Federal Regulations directly. Visit the Office of the Revisor of Statutes at <https://www.revisor.mn.gov/pubs> to review the Minnesota Rules.

The MPCA and your Metropolitan County have staff available to answer waste management questions. For more information, contact your nearest MPCA regional staff.

Metro County Hazardous Waste Offices

Anoka	763-422-7093
Carver	952-361-1800
Dakota	952-891-7557
Hennepin	612-348-3777
Ramsey	651-266-1199
Scott.....	952-496-8475
Washington.....	651-430-6655
Websites	http://www.co.[county].mn.us

Minnesota Pollution Control Agency

Toll free (all offices).....	1-800-657-3864
Brainerd.....	218-828-2492
Detroit Lakes	218-847-1519
Duluth	218-723-4660
Mankato	507-389-5977
Marshall	507-537-7146
Rochester	507-285-7343
St. Paul	651-296-6300
Willmar	320-214-3786
Website	http://www.pca.state.mn.us

Appendix J

MPCA Guidance Document – Guidelines-Disposal Methods for Water Filter Backwash Solids



Guidelines-Disposal Methods for Water Filter Backwash Solids

Water Quality/Wastewater Permits #2.02 • May 2007

This fact sheet is intended to provide guidance for the proper disposal of water treatment backwash by-product.

As described in Minn. R. 7035.0300 subp. 100 water filter backwash solids (WFBS) are considered a solid waste. If the material is either landfilled or land applied, it must be tested and handled in accordance with this guidance document.

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WFB:

Water Filter Backwash consists of both a liquid supernatant that contains dissolved and suspended solids, and a more solid sludge that has precipitated out of solution.

WFBS:

Water Filter Backwash Solids. These are the solids present following the backwash of water treatment media. This is considered a solid waste.

Background

Water filter backwash (WFB) is generated when potable water treatment plants treat their well water to reduce suspended and dissolved solids.

Sand filter systems pump well water into the top of a tank that is pressurized or gravity fed down through a porous (usually sand-rock) media. Periodically the filter media is backwashed to remove the entrained solids.

Water filter backwash is conveyed to wastewater treatment facilities (WWTF) or is slurried to smaller settling tanks or ponds. To reduce wastewater treatment costs some municipalities' route the supernatant to settling facilities and the sludge to a WWTF, or the other way around. WFB routed to a settling facility need to be periodically cleaned out. The frequency will depend on the size of the tank or pond; and the volume and concentration of solids in the effluent.

Options for managing WFB include slurrying the material to a WWTF, landfilling, using as non-residential construction fill, or land application. Before deciding to dispose of WFB at a WWTF, you should contact the WWTF to fully discuss this option including: (1) available capacity of the WWTF; and (2) potential need to submit a sanitary sewer extension (SSE) permit application.

Options for WFB/WFBS disposal:

1. Wastewater Treatment Facility
2. Landfill
3. Construction Fill
4. Land Application

Steps for landfilling WFBS

1. The WFBS must pass the paint filter test (i.e. is a solid) to be accepted in a landfill.
2. Test and compare the material for the analytes and standards listed in the landfill's industrial solid waste management plan.
3. For unlined landfills radium 226 (Ra) concentrations cannot exceed 5 pCi/g. For lined landfills Ra concentrations cannot exceed 30 pCi/g. If radium in the WFBS exceeds 30 pCi/g options for its disposal must be arranged with the Minnesota Department of Health's Radiation Section.
4. If the test results are in alignment with the landfill's industrial solid waste management plan, the WFBS may be taken to a MPCA permitted landfill.

Steps for using WFBs as construction fill

1. Test the material for the analytes listed in Table 1.
2. Using the analytical results, and formulas provided, determine whether the cumulative land applications limits listed in Table 1 are met.

If the results are below the limits in Table 1, the material may be used as fill for non-residential projects.

Steps for land applying WFB

1. Test the material for the analytes listed in Table 1.
2. Using the analytical results, and formulas provided, determine whether the cumulative land applications limits listed in Table 1 are met.
3. Determine the suitability of your site for land application using Tables 2-4.
4. Send in written notification to the county solid waste officer, and either the township clerk or city mayor, which ever is applicable, to provide local officials an opportunity to comment on the proposed application site.
5. Land apply the WFB in accordance with these guidelines.
6. Keep adequate records for future use.

Testing water filter backwash

Each time the WFB is to be land applied, a representative sample of the WFB must be collected in a way that provides a sample of the material which is actually land applied. For WFB this requires that an adequate number of subsamples be collected and composited into a single sample. The sample is then sent to a certified laboratory for testing. In addition to the parameters listed in Table 1, any chemical additives present in the WFB must also be analyzed. The results of these tests will be used to calculate the acceptable application rates for the by-product.

Table 1

Analytic parameters and cumulative limits for WFB

Parameter (Totals in mg/kg)	Cumulative Limits for land application
Radium 226	4.5 (milliCi/acre)
Arsenic	37 lb/acre
Barium	No Limit Established
Cadmium	No Limit Established
Copper	No Limit Established
Lead	No Limit Established
Manganese	No Limit Established
Mercury	No Limit Established
Molybdenum	No Limit Established
Nickel	No Limit Established
Selenium	No Limit Established
Zinc	No Limit Established
% percent solids	No Limit Established

If you have questions about what to test for, please contact the MPCA. If you have questions about sampling procedures, please contact your lab.

Formulas used to determine cumulative limits:

Maximum Application Rates Based on Radium and Arsenic:

Max. application = $37 \text{ lb/acre} \div (\text{arsenic conc.} \times 0.002)$

Based on arsenic (mg/kg)

Max. application = $4.5 \text{ milliCi/ac} \div (\text{radium 226 conc.} \times 0.0009)$

Based on radium 226 (pCi/g)

*** The maximum allowable WTB application is the lesser of the two results above minus any amount applied to the site from previous applications.**

Actual Arsenic Arsenic Actual application
Loading rate = Concentration x rate of solids x 0.002
(lbs/acre) (mg/kg) (dry tons/acre)

Actual Ra-226 Ra-226 Actual application
Loading rate = Concentration x rate of solids x 0.0009
(milliCi/acre) (pCi/g) (dry tons/acre)

Solids Applied = $\text{gal/acre} \times \% \text{ total solids} \div 240$
(dry tons/acre) Applied (as a decimal fraction)

Solids Applied = $\text{Wet tons/acre} \times \% \text{ total solids}$
(dry tons/acre) Applied (as a decimal fraction)

Site suitability criteria

All criteria in this section, including slope restrictions, site suitability criteria, and separation distances as provided in the following tables must be met for a site to be suitable for land application.

Table 2
Slope restrictions for application sites

Slope (percent)	Injection or Immediate Incorporation
0-12	Allowed
>12	Not Allowed

Table 3
Soil Suitability Criteria

Characteristic	Minimum Requirement ¹
Soil texture at the zone of by-product application	fine sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, sandy clay, silty clay loam, silty clay, or clay
Depth to bedrock	3 feet
Depth to seasonal high water table ²	3 feet

¹ This information can be determined by obtaining information from soil surveys published by the Natural Resources Conservation Service or by characterization of the site by a state of Minnesota licensed soil scientist or other qualified individual.

Site Selection and Use

It is recommended that a Type IV certified operator determine the suitability of each site for application and be responsible for properly land spreading the WFB. The site selection process should also include the following steps:

1. Determine that the soils located on the site meet all site suitability criteria;
2. If the site has received WTB in the past, determine the amount of pollutant that can be applied to the site. This is done by subtracting the cumulative amount of pollutant applied to the site from previous application from the cumulative pollutant limit in Table 1.

Provide written notification to the county solid waste officer, and either the township clerk or city mayor (depending on the location of the site). Notifications must include a description of the WFB, and how the WFB will be land applied including any staging or storage that will occur prior to land application.

Miscellaneous management practices/restrictions

1. WFB must be incorporated or injected within 48 hours;
2. Application of WFB is not allowed on areas of a site ponded with water or liquid;
3. No runoff of the WFB from the application site is allowed;
4. No significant surface ponding of liquid WFB is allowed after 6 hours of the application;
5. All WFB which are land applied must be uniformly distributed over the area of the site used during application; and
6. Wind-blown WFB is not allowed.

Record keeping requirements

1. A map which identifies the exact site location and year of application;
2. Testing results and application rates;
3. The crop of vegetation grown on the site;
4. Daily hauling records which indicate quantities transferred to storage or land applied with the storage or site location identified;
5. The cumulative quantity of pollutant applied to the site from all applications of WTB;
6. A cumulative total of the quantity of material applied on each site for the cropping year;
7. A copy of written information provided to each end user of the WFB, this includes any test results;
8. A copy of notification letters submitted to each city, county, and township.

Table 4
Minimum separation distances from land application sites

Feature	Incorporated or Injected With 48 Hours	
Private drinking water supply wells	200 ft.	
Public drinking water supply Wells	1000 ft.	
Lakes, rivers, streams, ditches, wetlands, intermittent streams, or tile inlets connected to these surface water features ¹	slope 0%-6%	50 ft.
	slope 6%-12%	100 ft
Grassed Water Ways ²	33 ft.	

¹ Intermittent stream means a drainage channel with definable banks that provides for runoff flow to any of the surface waters listed in the above table during snow melt or rainfall events.

² Grassed waterways are natural or constructed and seeded to grass as protection against erosion. Separation distances are from the centerline of grassed waterways. For a grassed waterway which is wider than the separation distances required, application is allowed to the edge of the grass strip.

Annual report

An annual report is only required for those facilities with a surface or subsurface discharge permitted by the MPCA.

A report of all water filter backwash solids disposal activities for the past cropping year must be submitted by December 31 of each year on the Annual Report Form. An electronic version of this form is available at the following address: <http://www.pca.state.mn.us>. The annual report must include the following information:

1. Method of disposal;
2. Total quantity disposed; and
3. Location of disposal; and
4. Analytical results.
5. Cumulative amount of arsenic and Radium-226 pollutant applied to the application site.

For assistance you may contact

For further assistance, contact the MPCA Customer Assistance Center at 651-297-2274, or 800-646-6247.

Terms/Definitions

Cropping Year means a year beginning on September 1 of the year prior to the growing season and ending August 31 the year the crop is harvested. For example, the 1994 cropping year began September 1, 1993 and ended August 31, 1994.

End User means the person that has accepted the IBP for their use as a soil amendment.

Immediately Incorporated means incorporated into the soil with tillage within 48 hours after surface application of an IBP.

Industrial By-product (IBP) has the same meaning as “solid waste” given in Minnesota Rules part 703 5.0300.

Type IV Certified Operator or Inspector means a person certified according to Minnesota Rules chapter 7048 for land application.

Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands must have the following attributes: (1) a predominance of hydric soils; (2) inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in a saturated soil condition; and (3) under normal circumstances support a prevalence of such vegetation.

Appendix K

Treated Seed Disposal

TREATED SEED DISPOSAL

Background

Treated seeds are seeds, including grain, forage, oil-plant, and vegetable seeds, that have been treated with pesticides or fungicides. Treated seeds can usually be identified by their distinctive color. Federal law requires that a distinctive color be applied to seeds that are treated and sold. Treated seeds that will not be used by planting are considered industrial solid wastes in Minnesota.

Disposal requirements

The MPCA considers waste treated seed and packaging to be an industrial solid waste with no need for further hazardous waste evaluation by the generator, landfill, or WTE incineration facility. In accordance with Minnesota Rules and MPCA Guidance Documents, operators will manage these wastes with the following considerations:

- Gas generation. Waste treated seed may present a fermentation and methane gas generation risk. Landfill operators must determine on a project-by-project basis what prospective volume of waste treated seed and potential resulting gas generation the landfill can safely accept on a per-load or per-day basis.
- Stability and settlement. Landfill operators must determine when thin-spreading of waste treated seed over the active disposal area or incorporation into other received waste may be needed to maintain slope stability and minimize localized settlement.
- Daily cover. To prevent wildlife foraging and exposure, waste treated seed of any volume must be immediately covered.

Treated seeds

Treated seeds are seeds, including grain, forage, oil-plant, and vegetable seeds, that have been treated with pesticides or fungicides. Treated seeds can usually be identified by their distinctive color. Federal law requires that a distinctive color be applied to seeds that are treated and sold.

Treated seeds that will be used by planting

Treated seed that will be used must be planted according to the label directions on the treated seed packaging. Depending on the label directions, planting may be allowed for crop production, wildlife habitat, or erosion or weather protection. There may also be restrictions on planting rate and depth.

Treated seeds that will not be used by planting

While the Minnesota Department of Agriculture (MDA) and the U.S. Environmental Protection Agency (EPA) regulate the pesticides and fungicides that are used to treat seeds, treated seeds themselves are exempt from these requirements. Instead, management of treated seeds that will not be used by planting is regulated by the Minnesota Pollution Control Agency (MPCA).

Treated seeds that will not be used by planting are considered industrial solid wastes in Minnesota. Because of the risk of concentrating the chemicals they are treated with, waste treated seeds in Minnesota may not be:

- Buried for disposal, except in a permitted solid waste landfill, even if burial is stated as a disposal option on the treated seed label, except that farmers in Minnesota may bury treated seeds from their own farm on the farm property. Spreading and incorporation into soil, except by a farmer of their own treated seeds on their own farm, is considered being buried for disposal and is not allowed.
- Composted.
- Burned, except in a permitted Waste-To-Energy (WTE) incineration facility. Waste treated seed may not be burned openly, in corn or wood stoves, or in residential or commercial boilers, including by farmers.
- Used for ethanol, biodiesel, or other fermentation or oil processing, unless specifically approved by the MPCA. Though some treated seed labels still list ethanol production as a management option if no measurable residues of pesticides remain in resulting by-products used in agronomic practice, the MPCA is not aware of any currently available use that does not raise this risk.

Packaging and equipment

Disposable packaging from treated seed, such as bags, is also considered a regulated solid waste in Minnesota, and may not be buried or burned except in permitted facilities. Farmers who do not need to dispose of any treated seeds may dispose of treated seed bags with their normal solid waste, but may not burn any plastic.

Reusable packaging, such as totes and cartons, may be reused with or without rinsing for the same product. When washing equipment, such as seed treatment equipment, planting equipment, or reusable packaging, the MPCA recommends using only the minimum amount of rinsewater necessary.

Rinsewater may be discharged to a publicly owned treatment works, commonly known as a sewage treatment plant, after notifying the works operator and following any conditions or restrictions they apply. Rinsewater may also be applied at label rates to a crop for which the active ingredients in the seed treatment are registered. Rinsewater may not be allowed to discharge to uncropped ground, surface water, or septic systems.

Arranging for proper disposal

Manufacturers, distributors, retailers, farmers, and any other person generating waste treated seed and packaging, called the waste *generators*, are responsible for arranging for proper disposal of their waste. The MPCA considers waste treated seed and packaging to be an industrial solid waste with no need for further hazardous waste evaluation by the generator, landfill, or WTE incineration facility.

You may find a list of Minnesota landfills in MPCA fact sheet #w-sw6-04, Minnesota landfills accepting mixed municipal solid waste, at: <https://www.pca.state.mn.us/sites/default/files/w-sw6-04.pdf>.

You may find a list of permitted Minnesota WTE incineration facilities on the website of the Minnesota Resource Recovery Association (MRRRA), at: <http://mnresourcerecovery.com/>.

Many of these landfills and WTE facilities may accept industrial solid waste treated seed, however **generators must contact the landfill or WTE facility first to ensure that they will agree to accept waste treated seeds and can safely manage this waste stream.**

Management in landfills

If not already explicitly included, treated seeds must be addressed in a revision to a landfill's Industrial Solid Waste Management Plan. The revised plan must be reviewed and approved by the MPCA before a landfill may receive this waste stream. Revisions for treated seeds must include:

- Gas generation. Waste treated seed may present a fermentation and methane gas generation risk. Landfill operators must determine what prospective volume of waste treated seed and potential resulting gas generation the landfill can safely accept on a per-load or per-day basis.
- Stability and settlement. Landfill operators must determine when thin-spreading of waste treated seed over the active disposal area or incorporation into other received waste may be needed to maintain slope stability and minimize localized settlement.
- Daily cover. To prevent wildlife foraging and exposure, waste treated seed of any volume must be immediately covered.

Some landfills may also be required to additionally obtain county approval to receive waste treated seed, depending on location.

More information

Guidance and requirements in this fact sheet were compiled from Minnesota Rules, Chapters 7035 and 7045, and incorporate regulatory interpretation decisions made by the MPCA on January 12, 2022. To review Minnesota Rules, visit the Office of the Revisor of Statutes at: <https://www.revisor.mn.gov/pubs>.

The MPCA's Small Business Environmental Assistance Program can offer free, confidential compliance assistance. For information about waste minimization, contact the Minnesota Technical Assistance Program.

Immediately report all spills that may damage the environment to the Minnesota Duty Officer.

Minnesota Pollution Control Agency

Toll free (all offices) 1-800-657-3864
All offices 651-296-6300
..... <https://www.pca.state.mn.us/>

Small Business Environmental Assistance Program

Toll free 1-800-657-3938
Metro 651-282-6143
..... <https://www.pca.state.mn.us/sbeap/>

Minnesota Technical Assistance Program

Toll free 1-800-247-0015
Metro 612-624-1300
..... <http://www.mntap.umn.edu>

Minnesota Duty Officer

Toll free 1-800-422-0798
Metro 651-649-5451