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**MATERIAL SEPARATION PLAN GUIDANCE
FOR MUNICIPAL WASTE COMBUSTORS**

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I. BACKGROUND AND PURPOSE

In 1998, the Department of Environmental Protection (DEP) issued new regulations governing Municipal Waste Combustor (MWC) facilities (310 CMR 7.08(7)). These regulations require each facility operator to prepare a Materials Separation Plan (Plan) which describes actions that the facility will take to remove products containing mercury and other toxic components or toxic precursors from the waste stream prior to incineration. Initially, these Plans will focus on removing mercury from the waste stream. The Plans must be approved by DEP, and then implemented by the facilities. This guidance document is intended to assist facility operators in preparing these Plans.

Materials Separation Plans represent one part of a multifaceted approach DEP is pursuing to reduce the toxicity of the solid waste stream and should not be viewed in isolation. DEP will approve Plans, which outline activities that will result in measurable, additional mercury diversion or reductions above and beyond those resulting from activities currently in place.

This guidance document is intended to encourage innovation and experimentation in the preparation of the Plans. DEP does not expect that all the goals laid out in these Plans will be met in the first year. If implementation of a particular Plan proves to be more costly than originally foreseen, DEP may extend the implementation timeline for that Plan; however, the total yearly budget is not expected to increase. DEP understands that MWC facilities do not have extensive experience in changing people's behavior patterns or encouraging participation in material separation programs. Consequently, DEP views its role in reviewing proposed Plans and progress reports as a collaborative effort intended to assist MWC facilities. Through its reviews, DEP may identify areas where it can provide specific technical assistance to facilities.

Implementing an approved Plan will constitute facility compliance with 310 CMR 7.08(2).

II. REGULATORY REQUIREMENTS

The Municipal Waste Combustor Rule (MWCR), 310 CMR 7.08, requires incinerators accepting more than 250 tons of waste per day to develop a Materials Separation Plan for the removal of mercury-bearing products and other toxic components or toxic precursors designated by the DEP. (See Appendix A for a copy of the regulations pertinent to these Plans.) These Plans are due six (6) months after the effective date of this guidance document. As of September 1, 1999, the following facilities are subject to the regulation:

- Fall River (This facility is currently closed. It will be subject to the regulations if it reopens.)
- Wheelabrator Environmental Systems, North Andover
- Ogden Martin Systems, Haverhill
- SEMASS Partnership, Rochester
- Wheelabrator Environmental Systems, Millbury
- Wheelabrator Environmental Systems, Saugus

A. Target Pollutants

The MWCR requires that Plans address removal of mercury-bearing products and other toxic components and precursors designated by DEP. With the publication of this guidance document,

DEP designates mercury as a “target pollutant.” Therefore, Plans must address the removal of mercury-bearing products from the waste stream. Facilities may include other toxic components or toxic precursors in initial Plans if these efforts will not hinder the removal of mercury-bearing products.

In the future, DEP may designate other toxic components or precursors, such as dioxin, cadmium, or lead as “target pollutants.” Prior to the designation of any additional toxic component or precursor, DEP will solicit public comment by providing a 30 day comment period on any proposed designations.

B. Inlet Testing

Each MWC facility must perform four (4) consecutive quarters of inlet testing to determine the uncontrolled mercury concentration in its flue gas before the Materials Separation Plan is implemented. (See 310 CMR 7.08 (7)). Data from these tests will provide baseline information on mercury emissions from each facility. DEP may require subsequent testing to assist in determining the success of a Plan or the baseline for separating other toxic components or precursors incorporated into future Plans.

C. Plan Approval

After receipt of a proposed MSP from an MWC, the Department and the MWC will work to reach an agreement on the specific activities to be included in the MSP for draft approval by the Department. During this time, the Department may within its discretion indicate to the MWC those activities the Department believes should be included in or be deleted from the proposed MSP. The Department may also make any additional suggestions for consideration by the MWC for inclusion in the MSP. The Department recognizes that the MWC has the discretion to allocate the appropriate resources to implement each activity under its MSP.

If an agreement is reached between the MWC and the Department on the MSP, the Department will issue a draft approval of the mutually agreed upon MSP. In the event an individual activity or group of activities proposed by the MWC or the Department is not agreed upon, such disagreement will be promptly submitted to an MWC executive official and the Department’s Assistant Commissioner of the Bureau of Waste Prevention in an effort to resolve the disagreement. If, within 30 days after such submission the representatives reach an agreement, then the Department will issue a draft approval of the mutually agreed upon MSP. If no agreement is reached, the Department will indicate to the MWC those activities that it believes need to be included in the MSP in order for the Department to issue a draft approval.

The Department will then issue a draft approval of the MSP, incorporating those portions of the Plan that have been agreed upon and those portions of the plan where there is a disagreement and that the Department has indicated to the MWC are to be included in the MSP. The Department’s issuance pursuant to this paragraph of a draft approval of an MSP to which an agreement has not been reached will not in any way prejudice or constitute a waiver by the MWC of any rights to challenge the final approval.

Once a draft approval is issued, the Department will proceed with the 30-day public comment period for each MSP and thereafter will approve or deny the MSP pursuant to the MSP provisions of 310 CMR 7.08(2). Within 30 days of the close of the public comment period, DEP will issue a final decision on the proposed Plan. DEP may require the applicant to modify the

original Plan, based on comments received. If DEP determines that the modifications constitute significant changes to the original Plan, it may hold a second public comment period.

An MWC is required to implement the approved MSP in accordance to the schedule described in the approved Plan. However, the Department's approval or denial of an MSP pursuant to this paragraph will not in any way prejudice or constitute a waiver by the MWC of any rights to challenge the approval or denial.

D. Annual Progress Reports

Each MWC facility must document in annual progress reports its efforts to separate materials containing mercury from its waste stream. Annual progress reports must be submitted to DEP by February 15 of each year, along with the annual facility reports required by 310 CMR 7.08 (2)(i). The first such progress report will be due on February 15, 2001. Each progress report should contain, at a minimum, a description of:

- how funds were expended;
- progress in achieving the goals outlined in the Plan, including:
 - the amount of designated material diverted and/or reduced and the measurement methodology employed;
 - access and/or participation rates achieved; and
 - market sectors and service areas targeted;
- problems encountered; and
- any recommended changes to improve the Plan.

E. Plan Modifications

The Department or an MWC may request that the MWC's MSP be modified or amended. Modifications to the MSP will be accomplished by the following process:

After receipt of a request by an MWC for modification of its MSP or upon the Department's notification to an MWC that its MSP needs to be modified, the Department and the MWC will work to reach an agreement on the modifications to the MSP.

If an agreement is reached between the MWC and the Department on the necessary modifications to the MSP, the Department will approve a modified MSP and the MWC will implement the approved, modified MSP.

If no agreement is reached within 30 days, such disagreement will be promptly submitted to an MWC executive official and the Department's Assistant Commissioner of the Bureau of Waste Prevention in an effort to resolve the disagreement. If, within 30 days after such submission, an agreement is reached by these representatives, the Department will approve the agreed upon modifications to the MSP and the MWC will implement the approved, modified MSP. If no agreement is reached, the Department will indicate to the MWC those modifications that it believes need to be made in the MSP and will approve such modified MSP.

With respect to any modifications that may materially change the direction of the activities of the MSP, the Department may issue a draft approval and may give a 30-day public comment period with respect to such modifications, and thereafter will approve or deny the modified MSP pursuant to the MSP Guidance.

An MWC is required to implement the approved MSP pursuant to 310 CMR 7.08(2)(f)7. However, the Department's approval of modifications to the MSP where an agreement has not been reached will not in any way prejudice or constitute a waiver by the MWC of any rights to challenge such modifications.

If the Department determines that any of the MSP requirements or its associated funding is not effective in reducing mercury-containing products in wastes destined for MWCs, the Department will reduce, eliminate, or otherwise modify in cooperation with the MWC any such requirement or funding in accordance with the process set forth the MSP Guidance.

Modifications required by the Department will not change the facility's overall cost structure for material separation activities.

III. ELEMENTS OF THE PLAN

In preparing Plans, facilities should ensure that the following elements are included: (1) goals; (2) a description of the process used to develop the Plan; (3) a description of programs and activities to be implemented; and (4) ways to measure whether the Plan has met its stated goals. Plans should be consistent with the Solid Waste Management Hierarchy, which ranks source reduction and recycling above disposal options.

A. Goals of the Plan

Facilities should include numerical goals, where feasible and appropriate, for source reduction and diversion of mercury and expected access and participation rates for activities in the Plan. If a Plan proposes to address other toxic components and precursors, similar numerical goals should be established, where feasible.

B. Plan Development Process

Each Plan should contain a brief description of the process used to develop the Plan, including stakeholder input, outside consulting assistance, and any research or modeling conducted.

C. Target Sectors

The Plan should identify and justify sectors to be targeted. In explaining why the Plan is directed at certain commercial, municipal, residential, and/or institutional sectors, a facility should reference data on incoming waste and customer base. For example, the Plan may include a description of the facility waste stream (amount, composition, customer segments, etc.).

D. Service Areas

The Plan and each proposed activity should identify the intended service area and include justification of its selection. Possible options for defining the service areas include geographic proximity to the facility, market sector, or origin of the waste.

E. Description of Activities

The Plan should include a description of each activity to be implemented. This should describe the focus of the activity and the implementation process. DEP has provided a list of potential activities in Table I below.

F. Budget and Timelines

The Plan and each activity should have a detailed budget and timeline for implementation. These budgets should cover a 2 year planning period. DEP encourages facilities to pursue outside partnerships, contributions and in-kind donations in addition to funds allocated to the Plan. Potential partnerships, contributions or in-kind donations should be listed as part of the attached budgets. For example, some area businesses may pay for the printing or mailing of informational materials.

G. Outreach/Education

The Plan and each activity should include an outreach and/or education component, and provide an explanation of how the proposed outreach/education efforts will be measured.

H. Oversight

The Plan should identify the specific facility staff person who will be responsible for implementing each activity and providing general oversight of the Plan implementation.

I. Measurement and Evaluation

The Plan should include mechanisms for obtaining data to document the amount of material that is reduced or diverted, the access and participation rates for each activity and the overall success of the Plan.

Table I. List of Potential Material Separation Plan Activities

This list is intended to assist facilities in developing Material Separation Plans. It should not be construed as a list of required activities. MWC facilities are not limited to the activities in this list as long as the Plan meets DEP's evaluation criteria. Expansions of existing activities are eligible for Plan inclusion to the extent that significant additional amounts of mercury will be diverted or eliminated.

- Fund a Materials Separation Plan program coordinator.
- Subsidize processing fees charged by mercury-recycling facilities.
- Pay for acquisition of storage sheds and spill kits for mercury-containing products.
- Establish municipal source separation and source reduction programs (for the collection of lamps, switches, thermostats, thermometers, batteries, etc.).
- Institute commercial source separation and source reduction programs (e.g., hospitals, dentist offices, other businesses, etc.).
- Sponsor one-time collections of selected mercury products at businesses or institutions.
- Pay for the development and distribution of educational materials.
- Underwrite costs for one-day local mercury collections.
- Subsidize the capital or operating costs of small regional Hazardous Household Product (HHP) collection centers.
- Provide coupons for the replacement purchase of non-mercury thermometers and other products.
- Pay for the costs of school laboratory mercury cleanouts.

- Conduct targeted outreach to municipal water supply companies, healthcare facilities, dentists, ventilation and air conditioning installers, etc. concerning collection of mercury products or replacement options.

IV. GUIDELINES AND PROCESS

This section outlines the guidelines and process for a facility to use in developing its Material Separation Plan and the criteria DEP will use to evaluate the Plan.

A. Expenditures

Prior to the promulgation of the MWC regulations, interested parties emphasized the importance of assuring that the costs of Material Separation Plans are clearly defined and reasonable. In their opinion, customers of the MWC facilities would ultimately bear the added expense. This cost will vary somewhat by facility. The costs of conducting the inlet testing may not be considered as part of the funds to be allocated for the implementation of Plans.

Each facility operator will spend up to a maximum of \$.50 per ton of municipal solid waste processed at the facility per year on the material separation plan requirements, regardless of the number of toxic components and toxic precursors to which such requirements apply. This annual amount will include the cost of developing and implementing the MSP.

If the Department determines that any of the MSP requirements or its associated funding is not effective in reducing mercury-containing products in wastes destined for MWCs, the Department will reduce, eliminate, or otherwise modify in cooperation with the MWC any such requirement or funding in accordance with the process set forth this Guidance

B. Phased Approach

Initial plans should cover a period of two years. This gives facilities flexibility to gradually expand the geographic area served by the plan or to increase the number and/or types of products that will be diverted or reduced over a two-year period.

C. Stakeholder Participation

DEP strongly recommends that each facility include stakeholders in the development of its Plan and modifications to its Plan— particularly citizens, waste haulers, and commercial businesses within the facility’s service area. For example, the facility may convene focus groups, seek written comment on preliminary drafts of the Plan, or form a workgroup comprised of a diverse group of community representatives to oversee the development of the Plan.

The facility should provide notice to the public and other stakeholders of the availability of the draft Plan and modifications to the Plan and final approved Plan electronically and in local papers. Facilities should provide draft and final approved plans to DEP in a web-enabled format so that DEP can post the materials on the DEP web site. Paper copies and electronic discs should be available on request and distributed to easily accessible public locations (e.g., libraries, town halls, etc.). The facility should identify a point of contact for ongoing public inquiries on a Plan.

D. Plan Evaluation Criteria

DEP will review proposed Plans and issue draft approval or disapproval, which will be subject to a 30-day public comment period. In evaluating proposed Plans, DEP will utilize the following criteria as appropriate:

- Does the Plan address all elements as described in Part III of this guidance document?
- Does the Plan provide a budget, timelines, and resources to accomplish the proposed activities and identify a coordinator who will be responsible for implementing the Plan?
- Does the Plan provide clear, meaningful material separation goals (including quantitative goals, where feasible) and appropriate activities to attain them?
- Will the proposed activities result in significant net reductions of mercury in the waste stream?
- Does the Plan include sufficient public outreach and education?
- Does the Plan provide appropriate mechanisms to document access and participation rates and the amount of materials diverted? “Access” means convenient locations for residents and businesses to participate in the program.
- Are the target sectors identified likely to produce significant results?
- Is the Plan consistent with the Solid Waste Management Hierarchy? Does the Plan contain a source reduction component?
- To what extent does the Plan leverage outside funding or in-kind donations? To what extent does the Plan make use of existing infrastructures and programs within the area?

E. Reassessment of the Plan

DEP will review annual progress reports to assess a Plan’s effectiveness in achieving reductions in the targeted material(s). In evaluating a Plan’s success, DEP will consider the following criteria, as appropriate:

- results of inlet testing;
- access and participation rates in the Plan’s activities;
- source reduction achievements and actual diversion of targeted material(s);
- qualitative research designed to measure the effectiveness of public education efforts (e.g., focus groups, surveys); and
- comparison with other facility progress reports.

In applying these criteria, DEP will consider whether a Plan has met its stated access, participation, diversion, and reduction goals. In the event that a facility significantly fails to meet its stated goals, DEP may require modifications to the facility’s existing Plan to increase its effectiveness.

APPENDIX A

BACKGROUND ON MERCURY AND SUMMARY OF STATE SEPARATION EFFORTS

Mercury is a toxic pollutant that can cause neurological damage in humans and animals. It is also a persistent pollutant—it does not break down in the environment into less toxic forms. Moreover, small amounts of mercury have significant environmental impacts. While mercury enters the environment from a wide variety of sources (including old industrial operations, landfills, etc.), most of the mercury found in the environment today is believed to be deposited on land and in water bodies from air pollution. Massachusetts and other Northeastern States have some of the highest levels of mercury deposition in the country. It results from air pollution sources in Massachusetts as well as upwind sources in other states.

Mercury contamination has been found in more than 60 Massachusetts lakes and ponds, as well as in water bodies in all other Northeastern States and in eastern Canada. The Massachusetts Department of Public Health has issued advisories warning people not to eat certain species of fish caught in affected water bodies. The Department of Public Health has also issued a general advisory warning pregnant women to avoid eating fresh water fish altogether, to avoid exposure to mercury.

Mercury is widely used in a vast array of products and processes because of its diverse properties. In small quantities, it conducts electricity, responds readily to temperature and pressure changes, forms alloys with almost all other metals, and kills bacteria and fungi. In addition, mercury plays an important role as an ingredient in several industrial processes, such as production of chlorine and caustic soda, a solvent for reactive and precious metals, a preservative for certain pharmaceutical products, and as a chemical catalyst.

In the electrical industry, mercury is used in products such as fluorescent and high intensity lamps, wiring devices and switches as well as mercuric oxide and button batteries. It is used in instruments that measure temperature and pressure, such as navigational devices. It is also a component of dental amalgam, which is employed to fill cavities. Specifically, mercury is used in the following products:

- Lighting—fluorescent, mercury vapor, metal halide, neon and high pressure sodium lamps
- Switches and relays, car-trunk and hood switches, tilt switches in freezers, washers and sump pumps
- Measuring devices—thermostats, thermometers, barometers, manometers, blood pressure and vacuum gauges
- Antibacterial applications—ingredient in soaps, ointments, contact lens solution, pigments
- Reagents, fixatives, and laboratory stains

As products, substances containing mercury enter the waste stream when they are thrown in the trash or poured down the drain. Recent studies have identified Municipal Waste Combustion facilities (MWC) as the major source of mercury emissions in Massachusetts, the other Northeastern States, and Eastern Canada.

In June 1998, the New England Governors and Eastern Canadian Premiers endorsed a regional Mercury Action Plan, committing to a goal of virtually eliminating mercury emissions from human sources. The plan established an interim goal of cutting mercury emissions in half by

2003 by implementing a combination of source reduction, recycling, and strict emission control measures. Massachusetts has adopted the plan's goals and measures identified to meet the goals.

DEP's 1998 emissions control regulations for MWCs requires MWCs to integrate material substitution and separation with end-of-the-pipe requirements. DEP considers pollution prevention to be ultimately a more powerful tool than end-of-the-pipe controls. Reducing the toxicity of the waste stream minimizes the toxicity of incinerator ash, which is eventually sent to a landfill. Without removing toxic materials from the waste stream, new pollution control equipment can increase mercury concentrations in ash as it reduces emissions of mercury in air. Reducing the toxicity of the waste stream also may abate health and environmental impacts from mercury exposure at a MWC facility. The Material Separation Plan that is required by the new MWC rule will be a critical tool for ensuring that toxic materials are removed from the facilities' waste streams.

The MWC regulation (which includes the requirement for a Material Separation Plan) is one element of the Commonwealth's overall strategy for reducing mercury levels in the environment. To achieve the goals established by the regional Mercury Action Plan, Massachusetts is developing both stricter emission limits for specific types of sources (of which the MWC facilities are the first) and is expanding programs for source separation/reduction. New regulations are currently being developed for Medical Waste Incinerators. These will be followed by Sewage Sludge Incinerator rules. The new rules will require all of these facilities to separate products containing mercury and other toxics from their waste streams. In addition, DEP is continuing to work with other Northeastern States and the Eastern Canadian Provinces to promote the adoption of national and international strategies for controlling mercury emissions from utility boilers, and to evaluate mercury emission control options for boilers at other types of sources.

Massachusetts is aggressively promoting source separation/ reduction and recycling policies and projects within the state, municipal, health care, institutional and business sectors. DEP has adopted the Universal Waste Rule for mercury-containing products, which eases the regulatory requirements in order to encourage recycling. DEP has executed a state contract for recycling mercury-bearing wastes, which enables state and municipal agencies to recycle mercury containing lamps and devices safely, conveniently, and inexpensively. Using the Clean Environment Fund (CEF), DEP has provided communities with equipment, technical assistance, and monetary grants for mercury source separation/reduction efforts. DEP has provided capital funds for the development of the state's first regional, permanent household hazardous product (HHP) center in Lexington and will be expanding HHP capacity statewide. In partnership with the University of Massachusetts, DEP has initiated universal waste recycling in 21 communities, encouraged product substitution, and reformed purchasing policies and initiated chemical cleanouts at schools.

DEP has provided funds to support development of a web site managed by the University of Lowell's Sustainable Hospital Project, which provides information about mercury and PVC-containing products and their alternatives. The Commonwealth's environmental agencies have held Pollution Prevention Conferences for healthcare facilities, worked to implement the American Hospital Association /EPA voluntary mercury reduction agreement, and provided technical assistance to healthcare facilities.

In Fiscal Year 2000, DEP and the Office of Technical Assistance (OTA) have grants to train staff to conduct technical assistance audits at hospitals in order to help them reduce and, where

possible, eliminate their mercury wastes and change their overall purchasing policies. In partnership with the Massachusetts Dental Society, DEP will help initiate a statewide collection of dental mercury and is working within the Regional Mercury Task Force to encourage the Thermostat Recycling Corporation (TRC) to establish a reverse distribution program for thermostats in the Northeastern states.

Finally, DEP is supporting the passage of Mercury Product Legislation, which would require labeling of mercury-containing products, establish product stewardship responsibility for manufacturers of such products, and stimulate source reduction. Such legislation is needed to provide consumers, dismantlers, and institutions with the information necessary for good management and purchasing decisions and to spur reductions in mercury content.