The Minnesota Pollution Control Agency (MPCA) staff provides this guidance document to assist you in treating and processing petroleum contaminated soil at thermal treatment facilities permitted by the MPCA. We intend this guidance document to complement individual MPCA Air Emission Permits issued to thermal treatment facilities. Thermal treatment facilities must comply with the terms of the Air Emission Permit (Permit) issued to them.

The MPCA allows treatment of petroleum contaminated soil only at thermal treatment facilities: a) with a current Permit; and b) that are in compliance with MPCA Permit conditions and rules. See the attached list of approved thermal treatment facilities, to be periodically updated.

**APPLICATION PROCESS**
The thermal treatment application process is as follows:

1. **Soil weight:** Determine how much soil is to be processed (tons).

2. **Sampling:** Have an independent laboratory collect samples for pre-burn analysis. Refer to Guidance Document 4-04 *Soil Sample Collection and Analysis Procedures* for sample collection and analysis procedures. NOTE: Methyl tertiary butyl ether analysis is not required for this step.

3. **Contaminant limits for thermal treatment:** Compare the analytical results to the guidelines listed below. Soil exceeding the contaminant concentrations below, or soil contaminated with used oil or other contaminants not listed, requires specific MPCA approval (see **USED OIL CONTAMINATED SOIL** section).

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>benzene</td>
<td>1,000 mg/kg</td>
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<tr>
<td>toluene</td>
<td>10,000 mg/kg</td>
</tr>
<tr>
<td>DRO</td>
<td>15,000 mg/kg</td>
</tr>
<tr>
<td>lead, if applicable</td>
<td>100 mg/kg*</td>
</tr>
<tr>
<td>xylene</td>
<td>10,000 mg/kg</td>
</tr>
<tr>
<td>ethylbenzene</td>
<td>10,000 mg/kg</td>
</tr>
<tr>
<td>GRO</td>
<td>30,000 mg/kg</td>
</tr>
</tbody>
</table>

*If **total lead** concentration exceeds 100 mg/kg, soil cannot be thermally treated.

4. **Application form:** Complete Guidance Document 3-11 *Application to Thermally Treat Petroleum Contaminated Soil* and submit with the laboratory results to one of the permitted thermal treatment facilities (see Guidance Document 3-12 *Thermal Treatment Facilities*).

5. **Thermal treatment facility approval:** Obtain approval and signature of acceptance from the thermal treatment facility operator.

6. **Send application:** Send the original signed application with a copy of the laboratory results to the MPCA project manager (see web page at the end of this guidance document).
In addition, send one copy of the application to the local units of government where soil originated and where the thermal treatment facility is located (this provides local government the opportunity to inform the applicant of applicable local ordinances). Keep one copy for your records.

An MPCA approval letter will not be required to treat the soil, provided the contaminant is not used oil, the contaminant limits are not exceeded (item 3, above) and the conditions of the thermal treatment facility’s Permit are being met.

LOCAL NOTIFICATION
It is the responsibility of the generator of the contaminated soil and the thermal treatment processor to comply with applicable local ordinances. Local units of government must be notified so the applicant may be informed of applicable local ordinances before the thermal treatment facility receives contaminated soil for treatment.

STOCKPILE MANAGEMENT
Each thermal treatment facility’s Permit specifically outlines its requirements for storage and management of contaminated soil. Generally, unless a facility has an industrial solid waste permit, stockpiled contaminated soil must be processed within 60 days of receipt by the facility and no more than 5,000 cubic yards of contaminated soil is allowed to accumulate at the facility at any time.

Since stockpiled contaminated soil is considered an industrial solid waste, the procedures for storage of solid waste as defined in Minn. R. 7035.2855 must be followed. At a minimum, anyone handling an industrial solid waste must:

1. Provide a storage area with a liner designed, constructed and operated to prevent waste or leachate migration into the adjacent soil, ground water, or surface water at all times during the active life and closure period of the stockpile storage facility;

2. manage the contaminated soil to prevent or minimize volatilization; and

3. keep physical handling to a minimum and take care to avoid aerating the contaminated soil.

SOIL HANDLING AND MANAGEMENT BY THE THERMAL TREATMENT FACILITY
A thermal treatment facility may obtain approval from the MPCA Petroleum Remediation Program staff to combine batches of soil from more than one petroleum leak or spill site together for treatment. In the past, facilities have been required to handle soil from each leak site as a discrete batch until after the soil had been treated and post-burn sample analysis had verified that the post-burn contaminant levels listed in Table 15.2 had been reached. The process of combining batches of soil from different leak/spill sites should allow for more efficient treatment of small batches of soil. In addition, the process can be used to increase treatment efficiency by allowing for the mixing of different soil types, such as sand with clay. Combining soil contaminated with used oil with other batches of soil is not allowed.

A thermal treatment facility wishing to obtain permission to combine batches of soil from more than one site must submit and have approved by MPCA Petroleum Remediation Program staff a soil management plan which includes the following information:

1. The physical process by which soil from different sites will be “mixed.” This should include a description of how soil will be managed to prevent or minimize volatilization and avoid aeration.
2. A description of the proposed post-burn sampling process, including:
   a) How often sampling will be conducted, and for what parameters;
   b) How client billing for treatment and sampling of soil will be handled if there is more than one
      client; and
   c) A plan of response in the event that the post-burn concentrations listed in Table 15.2
      are not reached.

REPORTING REQUIREMENTS FOR THERMAL TREATMENT FACILITIES
Each thermal treatment facility must maintain a project log consisting of:
1. MPCA Site ID Number (LEAK or SPILL number);
2. MPCA Project Manager;
3. source of the soil--site name and city;
4. date of soil excavation;
5. tons of soil received (one cubic yard of soil is approximately equivalent to 1.4 tons of soil);
6. soil type;
7. contaminant types(s) (gasoline, diesel fuel, no. 1 fuel oil, no. 2 fuel oil, kerosene, aviation gas,
    used oil, hydraulic fluid, cutting oil, motor oil, quench oil);
8. laboratory results. The facility must provide copies of laboratory analytical reports for the pre-
    burn and post-burn analyses. The pre-burn sampling and analyses are discussed under
    APPLICATION PROCESS. Post-burn analytical results should be reported in mg/kg GRO or
    DRO;
9. date soil received;
10. date soil processed; and
11. final soil use.

Thermal treatment facilities must submit this information to the MPCA Petroleum Remediation Program
no later than the 15th of each month. If no soil was processed in any one month, the facility should
submit a report reflecting that lack of activity. If only partial information is available for soil received but
not processed, or the soil has been processed but the post-burn analysis results have not been received
from the laboratory, a monthly report with incomplete data shall be submitted by the facility. A complete
report shall be submitted the next month.

MPCA staff assumes that proper soil treatment/disposal has occurred when the thermal treatment facility
submits the information above. If no information is received from the facility regarding a batch of soil,
the MPCA assumes the soil generator still has control of the contaminated soil.

USED OIL CONTAMINATED SOIL
If soil is contaminated with used oil, it is necessary to obtain written approval from the MPCA staff in
order to have it thermally treated. This approval process involves demonstration through laboratory
analyses that the used oil contaminated soil is not a hazardous waste as defined in Minn. R. ch. 7045. The
approval process is as follows:

1. SAMPLING REQUIREMENTS: The following analyses are required:
   Volatile organic compounds
   DRO
   RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver)
   Polychlorinated biphenyls (PCBs)**
   Pesticide and herbicide compounds (endrin, lindane, methoxychlor, toxaphene,
   2,4-dichlorophenoxyacetic acid and 2,4,5-trichlorophenoxypropionic acid)**
**If the owner of the site can certify to the satisfaction of the MPCA staff that these contaminants are not present in the soil, an exemption may be granted from analyses of these contaminants.

NOTE: Consult Guidance Document 4-04 Soil Sample Collection and Analysis Procedures for further detail on sampling requirements, methodologies, etc.

2. REVIEW BY THERMAL TREATMENT FACILITY: The facility operator must review the complete analytical data and determine whether the soil can be treated at that facility in accordance with the conditions of its Permit. The facility operator must certify in writing that he/she has thoroughly reviewed the data and that by thermally treating the soil in question, the facility will not be violating any of the conditions of its Permit.

3. REVIEW BY THE MPCA STAFF: Submit data to:

   Chris McLain/Thermal Treatment Coordinator  
   Minnesota Pollution Control Agency  
   Petroleum and Landfill Remediation Section  
   520 Lafayette Road North  
   St. Paul, Minnesota 55155-4194

The MPCA staff will review the data to determine whether the soil is appropriate for thermal treatment, and issue a letter approving or denying thermal treatment.
FINAL SOIL DISPOSAL
Acceptable final uses of thermally treated soil are as follows:

<table>
<thead>
<tr>
<th>POST-BURN CONCENTRATIONS:</th>
<th>SUITABLE DISPOSAL/USE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 mg/kg GRO or DRO</td>
<td>Controlled fill (except in residential areas in wetlands or in other sensitive areas.)</td>
</tr>
<tr>
<td></td>
<td>Incorporation into asphalt</td>
</tr>
<tr>
<td>Less than 20 mg/kg GRO or DRO</td>
<td>Roadway embankment</td>
</tr>
<tr>
<td></td>
<td>Roadbase</td>
</tr>
<tr>
<td></td>
<td>Backfill into original tank basin</td>
</tr>
</tbody>
</table>

Unless a written exception is granted by MPCA staff, processed soil exceeding 20 mg/kg GRO or DRO is not considered adequately treated and should be reprocessed by the thermal treatment facility until it is at or below these levels. Soil with lead content above 20 mg/kg shall not be used as controlled fill.

### Web pages and phone numbers

<table>
<thead>
<tr>
<th>MPCA staff</th>
<th><a href="http://data.pca.state.mn.us/pca/emplsearch.html">http://data.pca.state.mn.us/pca/emplsearch.html</a></th>
</tr>
</thead>
<tbody>
<tr>
<td>MPCA toll free</td>
<td>1-800-657-3864</td>
</tr>
<tr>
<td>MPCA Infor. Request</td>
<td><a href="http://www.pca.state.mn.us/about/inforequest.html">http://www.pca.state.mn.us/about/inforequest.html</a></td>
</tr>
<tr>
<td>PetroFund Web Page</td>
<td><a href="http://www.commerce.state.mn.us/mainpf.htm">http://www.commerce.state.mn.us/mainpf.htm</a></td>
</tr>
<tr>
<td>PetroFund Phone</td>
<td>651-297-1119, or 1-800-638-0418</td>
</tr>
<tr>
<td><strong>State Duty Officer</strong></td>
<td>651-649-5451 or 1-800-422-0798</td>
</tr>
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