Solid Waste Management

Petroleum Contamination

What is PCS

For the purpose of this document, petroleum contaminated soil (PCS) is defined as soil contaminated with petroleum products including, but not limited to, gasoline, diesel fuel, kerosene, jet fuel, motor oil, hydraulic fluid or some combination thereof.

Petroleum is a mixture of several chemicals, many of which evaporate quickly. The petroleum chemicals that do not evaporate quickly are "biodegradable", which means they can be degraded or "eaten up" by bacteria and other microbes in the soil.

Stockpiling of PCS can only be done on a temporary basis while making arrangements for treatment. PCS may be stored up to seven days in compliance with IAC 567-120.9(3) requirements.

Solid waste rules and permitting – *iowadnr.gov/Environmental-Protection/Land-Quality/Solid-Waste*

Testing general background

The Iowa Department of Natural Resources requires that excavated petroleum contaminated soil be treated or disposed of properly.

All solid wastes except household waste are required to have a hazardous waste determination as stated in 40 CFR 262.11. Petroleum contaminated materials are solid wastes when actively managed (excavated) as wastes.

If soil removal appears to be the best method for soil cleanup, a decision must be made concerning how the soils will be managed.

Petroleum contamination treatment and disposal will depend on the type of product. Gasoline, diesel, crude, waste oil, etc. all have different properties, thus testing will vary.

Sampling guidance -

DNR

Typical Number of Samples Needed to Adequately Characterize Stockpiled Soil (1)

Cubic Yards of Soil	Number of Samples for Chemical Analysis
0-100	3
101-500	5
501-1000	7
1001-2000	10
>2000	10 + 1 for each additional 500 cubic yards

1) Source: 1995 Guidance for Remediation of Petroleum Contaminated Soil.

Testing laboratory analytics

The following is guidance and cannot cover every situation. Additional sampling may be required for potential contaminates that could also be present.

Gasoline – OA1(TPH), Lead if warranted.

Diesel – OA2(TEH), OA1

Ethanol – Paint filter test,
E85 - OA1

Biodiesel – OA1, OA2

Heavy oils – PAHs, PCBs, RCRA metals

Waste oil, used motor oil – OA1, OA2, PAH's, RCRA metals, PCBs

Crude oil – OA1, RCRA metals

Note that landfarming of PCS shall be tested pursuant to paragraph 120.6(2)"c.", which includes MTBE.*

Disposal options

Landfill – Landfills have remediation areas for PCS managed in accordance with IAC 567 chapter 109, or may direct bury, if permitted. Each landfill may have its own sampling, analysis and disposal requirements, and must pass the paint filter test. Contact your local landfill for further information.

Landfarm – This technology involves spreading excavated contaminated soils in a thin layer on the ground surface and stimulating aerobic microbial activity within the soils through aeration. Permits are required for any land-farming activity over 3 cubic yards of soil, and shall be handled in accordance with IAC 567 chapter 120.

Thermal treatment - Contaminated soil can be treated on-site through the use of a mobile unit or transported to a stationary facility.

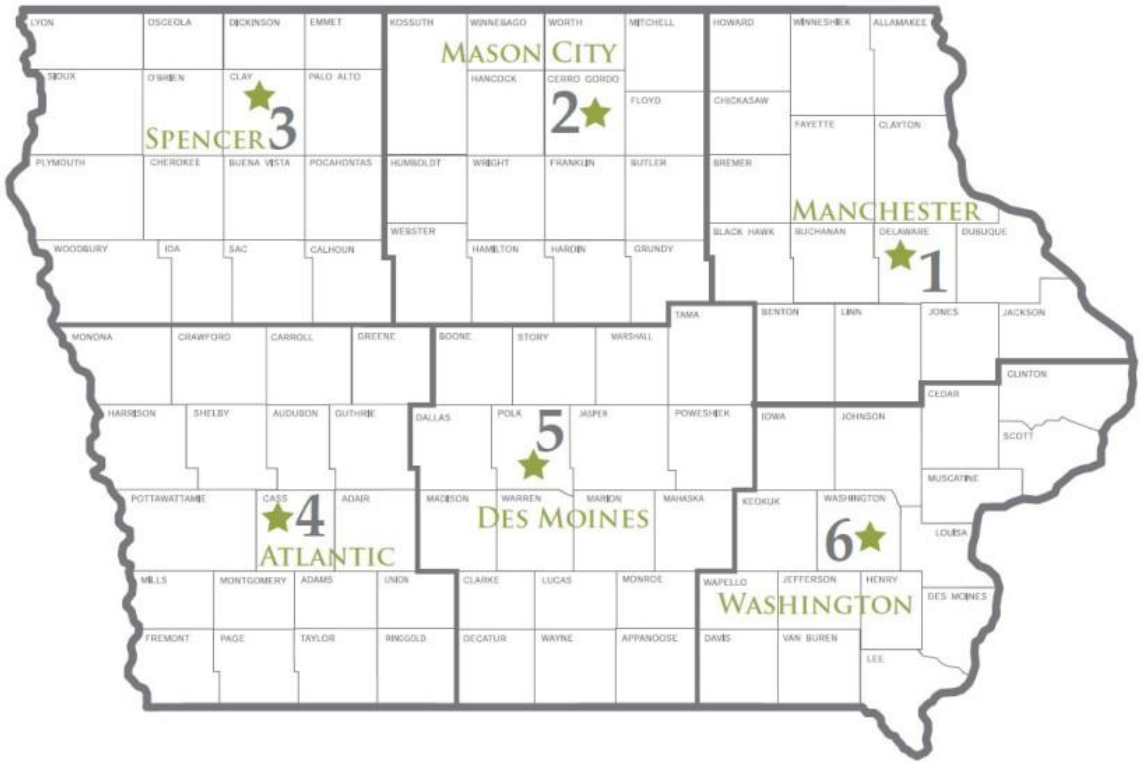
Reuse – If excavated soil is tested and below statewide standards, and contains no other contaminants, it is not PCS and be left on site or reused. See contaminated soil fact sheet on Solid waste Web page. (Link left column)

Method OA-1

Method OA-1 is used to determine the concentration of volatile petroleum hydrocarbons and other individual components such as Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) in waste and soil/solids. It is a modification of EPA method 8015 and provides conditions and quantitation calculations for the detection of high-volatility gasoline-range organic compounds using chromatography or spectrometry. OA-1 methods also yield a quantity of Total Purgeable Hydrocarbons (TPH) for the sample. This measurement may be required for some PCS disposal methods.

Method OA-2

Method OA-2 is a modification of EPA method 8100 and determines mineral spirits, kerosene, diesel fuel, fuel oil, motor oil and hydraulic fluid in a liquid or solid matrix. Laboratories must also run gasoline (TPH) to be able to distinguish this product from heavier products. It covers the determination of low volatility petroleum products and organic compounds that are soluble in moderate to low polarity organic solvents and are amenable to gas chromatography. *This test is often referred to the Total Extractable Hydrocarbon or TEH.* This test can be used to identify a petroleum product as to the type or class of petroleum product. Estimation of the amount of product can be made using TEH, but regulatory levels cannot be determined.



Field office locations:

- Manchester Field Office #1, Northeast Iowa - 563/927-2640
- Mason City Field Office #2, North Central Iowa - 641/424-4073
- Spencer Field Office #3, Northwest Iowa – 712/262-4177
- Atlantic Field Office #4, Southwest Iowa – 712/243-1934
- Des Moines Field Office #5, South Central Iowa – 515/725-0268
- Washington Field Office #6, Southeast Iowa – 319/653-2135

Guidelines for Reporting Hazardous Conditions Verbal Reporting

24 hour number for release reporting

515/725-8694

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