Agency of Natural Resources
Department of Environmental Conservation
Waste Management Division

Managing Silt Deposited by Disaster Flooding

September 17, 2011

For information on potential human health risks from soils and sediment generated from flooding, and safe handling of these materials, refer to the attached guidance published by Vermont Department of Health, and available here:
http://healthvermont.gov/enviro/water/documents/irene_soil_cleanup_guide_090911.pdf

Regarding the disposition of accumulated soils and sediments, the Agency of Natural Resources is advocating a pragmatic, three-tiered approach building from the Vermont Department of Health's guidance:

1. If the silt is known to be contaminated by recognized source of petroleum, pesticides, sewerage, animal waste, industrial chemicals, or the like, contact Vermont Department of Environmental Conservation (DEC) - call 211 or 1- 800-641-5005 and ask for the Vermont Hazardous Materials Response Team or DEC Spill Team for assistance. A chemical characterization of the silt through sampling and analysis silt may be necessary to determine the appropriate disposal option.

2. If trash or other man-made debris is present, or contamination is possible, but not evident, the silt can be brought to a landfill as either cover material or as a waste. The landfill may impose pre-disposal testing requirements or specific management strategies. Any material disposed of at a landfill must contain no free liquids as determined by the "paint filter test."

3. Realistically, most silt and sediment generated from deposition by flood waters will be "contaminated" to some degree; however, the ANR believes that the majority or the material, with the above exceptions, can be managed as fill material. As such, towns may bring the silt or sediment to a borrow pit or other appropriate, secure location for storage and reuse. The storage area should be located and managed to limit runoff from the pile and protect nearby surface water quality. This may necessitate the construction of berms, silt fencing, swales and other erosion control devices.

We would be glad to advise property owners and municipalities with their individual situations. Please call Dennis Fekert (802) 241-1493 or Buzz Surwilo (802) 343-5097, for additional technical assistance.

VERMONT AGENCY OF NATURAL RESOURCES
DEPARTMENT OF HEALTH

Tropical Storm Irene flood sediment and soil clean-up information

Sept. 9, 2011

This guidance applies to private and public yards, grounds and properties. This includes school grounds, playing fields and playgrounds.

In general, sediment and soil deposited by flood waters *may* be contaminated if there was disruption of septic systems, sewage disposal systems, water treatment systems, agricultural animal waste or fertilizers, dislodged industrial chemicals including agricultural chemicals, or spilled fuel oil, gasoline or diesel fuel. *Contamination is not likely unless there was a local source disrupted in the flooding.*

Contamination can be identified by sight or smell. If you see or smell evidence of oil, chemical or other contamination, keep people and pets away from the area until the contamination has been removed.

The most likely health threats are injuries due to physical hazards and gastrointestinal illness from bacterial contamination.

Sunlight, soil activity and rain help destroy any bacteria that may be in flood sediment, so it is usually safe to use areas with deposited sediment a couple of weeks after flood water has receded. Several sun and rain cycles destroy and remove bacteria.

Clean-up Recommendations

Wear an N-95 respirator (also called an N-95 mask) during all clean-up activities when inhalable particles are generated, such as mold, sand, silt, dry dirt or mud, dust or any other particles not otherwise specified. If inhaled, particles alone can cause upper airway and lung irritation and can make asthma and other lung diseases worsen.

Most hardware stores sell N-95 respirators. They are also available at no cost from Health Department district offices as part of the flood response.

To remove non-contaminated mud, dry dirt, or dust from indoor areas (home, building)**:**

- Wear an N-95 respirator.
- Spray dry dirt or dust with water (soapy water if possible) to help prevent particles from getting in the air.
- Small amounts of mud, dry dirt or dust can be spread on the ground.
- Do not dump flood sediment in rivers, streams or other bodies of water.

To control non-contaminated mud, dry dirt, or dust from outdoor areas (yard, field)[1]:

- Plant new grass.
- Water to flush organisms out of the upper soil layers.
- Spray dry dirt or dust with water (soapy water if possible) to help prevent particles from getting in the air.
- Consider depositing new soil on top of affected area or covering the affected ground with asphalt, brick, stone, cement, or other solid paving material.

To remove sediment that you suspect is contaminated from indoor or outdoor areas:

- Call an environmental clean-up company: http://www.anr.state.vt.us/dec/wastediv/spills/pubs/Cleanup_Contractors.pdf
- Or call an environmental consultant: http://www.anr.state.vt.us/dec/wastediv/sms/pubs/consult.lst.pdf
- Dial 2-1-1 to report fuel oil, gasoline, or diesel spills or other chemical spills. Do not touch contaminated sediment.

- **If you must clean sediment that you suspect is contaminated** with septic, sewage, animal waste, industrial or agricultural chemicals:

    - Wear an N-95 respirator, rubber or plastic non-permeable gloves, goggles, pants and a long-sleeved shirt, and rubber-soled leather or non-permeable work. boots/shoes. If clothes become soiled, remove and discard them. Remove any soiled clothes before entering clean environments to prevent contamination. Additional protective gear may be necessary for worker safety, especially in confined spaces.

    - Ventilate the area if indoors by opening windows and using fans.

    - Spray dry dirt or dust with water (soapy water if possible) to prevent particles from getting into the air.

    - Dispose of contaminated material in a properly certified facility. Contact your local solid waste official for more information, or go to: http://www.anr.state.vt.us/dec/wastediv/solid/swmdlist.htm

    - Remove sand from sandboxes, and soil, mulch or wood chips around playgrounds or areas where young children are likely to play. Depending on the extent and type of contamination, consider removing contaminated sediment from fields or large outdoor areas.[1] If you need further consultation, call the Health Department at 1-800-439-8550.

    - Do not dump flood sediment in rivers, streams, or other bodies of water.

    - Hydrated lime (also known as calcium hydroxide) may be applied to help disinfect small areas of septic or animal waste or sewage. Lime is caustic, so you must follow instructions, wear rubber boots, gloves, goggles, and other protective clothing, and take steps to keep people and animals from being exposed.

- **Seek medical advice** for symptoms such as: shortness of breath, chest pain, headaches, skin rashes, dizziness, nausea, vomiting, diarrhea, fever, excitability, weakness or extreme fatigue. If the skin is broken with a puncture wound, a tetanus booster with Tdap vaccine may be needed if it has been five years or more since the last tetanus shot. **If you need immediate emergency medical services,** dial 9-1-1.

For more information, go to the Health Department's website at www.healthvermont.gov

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[1] Env. Health Services Branch, NCEH, CDC. *Guidance on Microbial Contamination in Previously Flooded Outdoor Areas;* 2011. Available from: http://www.cdc.gov/nceh/ehs/Docs/Guidance_Contamination_of_Flooded_Areas.pdf