Spill Contingency Plan

Bionest's Pilot Demonstration in Iqaluit

City of Iqaluit

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1. SPILL CONTINGENCY PLAN

In the case of an emergency such as a fire and/or spill, a response plan should be established to instruct those personnel involved with direction to take action to such a case in the most appropriate manner. Due to the nature of the facility, uncontrolled fires and spills of unknown or hazardous materials should be treated with extreme caution.

City personnel that are responsible for the sewage treatment and disposal facility should be trained in Workplace Hazardous Materials Information System (WHMIS), Transportation of Dangerous Goods Act and Regulation (TDGA and TDGR) as well as First Aid. In addition, personnel should ensure that proper vaccinations of employees are kept current and that they are familiar with the response plan. It is good practice to obtain copies of a list of procedures and equipment that are to be used for such emergencies in all sewage trucks and the common work area.

In all response cases, personnel should place their own safety as the highest priority. The procedures that should be taken in the likelihood of a potential fire or spill are described in the following sections.

2. FIRE

A contingency plan should be developed by the City Fire Department to describe the response and action protocols to be implemented in the case of a fire. Special precautions should be used in the case of waste burning as it can produce harmful, poisonous gases. If an uncontrolled fire occurs, the following procedure should be implemented:

- Immediately evacuate area and go to community's designated meeting place.
- Keep all personnel up-wind from the source.
- Notify the City Fire Department at (867) 979-4422.

3. SPILLS

A spill contingency plan has been developed by the City that identifies the procedures to follow when a spill of any hazardous material has occurred. Similar procedures can be used for the case of sewage spills.

Below, in the subsequent sections, the measures that are to be implemented if a spill or uncontrolled release of a substance occurs during the collection and transportation of wastewater are described for the following areas:

- Initial Response
- Containment Procedures
- Spot Spills
- Spills in Proximity to a Waterbody

3.1 Indicators

The Bionest Kodiak™ wastewater treatment unit utilized for the pilot demonstration is equipped with high level and a low level float switch. The high level float indicates that the effluent filter is partially clogged and requires maintenance. An alarm goes off whenever the lever raises 25 mm above the normal effective volume level. A low level switch also located at the end of the second compartment indicates any wastewater losses. The four compartments of the Kodiak™ unit are always filled as it operates continuously as a plug-flow reactor. A low level can automatically be attributed to a spill.

The unit is also equipped with an electromagnetic flowmeter Promag 50W40 from Endress & Hauser located 600 mm from the tank's inlet. The flowmeter is connected to a Fuji graphical data logger (PHL21B21-E10EV from Avensys) that itself communicates through an Ethernet communication cable. Therefore, any abnormal change in wastewater flow rate can trigger an alarm for the Operator at the Plant.

The container was originally reinforced with 50 x 100 mm steel bars every 600 mm. Polyurethane was then applied between the reinforcement bars before plywood was fixed over the structure. The plywood was then coated with 12 mm of fibreglass. All pipe connections across the tank were done using watertight "uniseals" (rubber grommets).

All pipes on the outside of the tank will be copper, properly insulated and a wooden structure will be constructed around the pipes to ensure security.

Visual inspections around the 20 ft Kodiak container located 2.4 m from the Headwork will also provide indications of a spill.

3.2 Initial Response

If a spill occurs, the first person at the scene will:

1. Perform an initial assessment to identify immediate danger.
2. Identify the material spilled and verify the nature of the hazard by corresponding to the Material Safety Data Sheets (MSDS) so to apply appropriate safety procedures.
3. If possible and safe to do so, cut off and/or stop the source of the spill.
4. Control danger to the human life without further assistance, if possible. If, for instance, the spill creates a fire, explosion or other hazard, remove all potential ignition sources.
5. Obtain immediately assistance from others and start to contain and/or clean up the spill.
6. Contact the Municipal Works Foreman to notify them of the spill as they will contact relevant regulators and community residents of the occurrence.
7. Mark off the spill site as to warn the public of the incident and to prevent access. Once the Municipal Works Foreman has been contacted and have arrived on site, he/she will immediately ensure that:
    a. Necessary arrangements for first aid and removal of injured personnel have been made. Where possible, necessary action will be taken to secure the site to protect human safety.
    b. If not already done and is safe to do so, take the appropriate action to stop the flow or release of material/substance as well as to contain or prevent the spread of the spilled material if at all possible.
    c. Contact the 24 Hour Engineering and Public Works Assistance at (867) 975-8509 to report spill and obtain additional assistance.
    d. Contact the City's Senior Administrative Officer.
    e. If required, notify the Fire Department at (867) 979-4422 and RCMP Detachment at (867) 979-1111.

3.3 Containment Procedures

Response personnel will immediately start to contain the spill to ensure that the spill does not spread and contaminant other areas and/or environment. The following actions might also be taken if relevant to the spill situation:

1. If the source of the spill is coming from a leaking fuel truck, then pump fuel into a suitable container or another tank until the tank is dry.
2. Culverts that have been potentially affected by the spill should be blocked off to minimize travel of the substance.
3. Dig a basin or construct a berm to stop and contain the pathway and flow of the spill.
4. Apply absorbent materials to contain and recover small volumes of spilled substance.
5. Spilled substance and/or material are to be collected and transported to an approved waste disposal facility in the appropriate matter.

3.4 Spot Spills

Spot spills are those that involve a small volume of substance in a controlled material over a small, contained surface area. For spot spills involving hazardous materials, the following steps may be taken by personnel:

- Immediately take action to clean up spill by implementing proper or suitable handling and containment procedures for the material spilled.
- Report spill to the Municipal Works Foreman and City's Senior Administrative Officer.
- Determine suitable methods for removal of contaminated soils and restoring site of the spill.
- Consult environmental and government agencies for assistance.
- Flag and record locations and information of spot spills for future reference and monitoring.

- In the case of a spot sewage spill, place lime over the sewage, collect and transport the material to the solid waste facility for proper disposal.

3.5 Spills in Proximity to a Waterbody

If a spill occurs in close proximity to a waterbody, take necessary actions to prevent the spill entering the nearby waterbody. Similar containment procedures discussed above in Section 3.3 can be used to assist with the likelihood of spills located near water bodies.