

## **FUEL SPILL CONTINGENCY PLAN – Igloolik Ecosystem Monitoring project**

Given the very low amount of fuel that we will be using in our research project (max of 3 jerry cans [60L] of gasoline/ max of 1 small propane tank [20L] / max of 2 jerry cans [40L] of white gas), there is a limited risk of fuel spill. Nevertheless, the following procedures will be followed in the eventuality of a spill.

### **1. Procedures for initial action**

The first person arriving at the scene of a spill will:

- a. protect the safety of personnel and notify all personnel of spill occurrence
- b. shut of ignition sources, if safe to do so
- c. identify the spilled material
- d. locate the source of the spill
- e. stop the spill at its source, if safe to do so
- f. take actions to contain and clean up the spilled material, using one of the two spill kits that will be readily available at the camp site
- g. record the approximate quantity, product type, location, whether spill in still in progress, odour, colour, weather

### **2. Spill reporting**

As soon as possible, the spill will be reported to officials at the Government of Nunavut and at the Igloolik Hamlet. The first person arriving at the scene of a spill will:

- a. Report spill immediately to camp managers (Nicolas Lecomte and Marie-Andrée Giroux), who will determine if spill is to be reported to the NWT-NU 24-Hour Spill Line at 867-920-8130.
- b. Fill out and fax or email the Spill Report to the staff of the NWT-NU 24-Hour spill line. Also fax or email the report to the head office. Each spill kit, as the camp manager, will have copies of the NWT-NU Spill Report form to be filled out (see Appendix B-2). NWT-NU 24-Hour Spill Line Fax: (867) 873-6924 / NWT-NU 24-Hour Spill Line Email: [spills@gov.nt.ca](mailto:spills@gov.nt.ca)

### **3. Procedures for containing and cleaning up the spill**

#### **C. Procedures for containing and controlling the spill (e.g. on land, water, snow. etc.)**

- Initiate spill containment by first determining what will be affected by the spill.
- Assess speed and direction of spill and cause of movement (water, wind and slope).
- Determine best location for containing spill, avoiding any water bodies.

***Specific spill containment methods for land, water, ice and snow.***

## **1) Containment of Spills on Land**

Spills on land include spills on rock, gravel, soil and/or vegetation. It is important to note that soil is a natural sorbent, thus spills on soil are generally less serious than spills on water as contaminated soil can be more easily recovered. Generally spills on land occur during the late spring, summer or fall when snow cover is at a minimum. It is important that all measures be undertaken to avoid spills reaching open water bodies.

### ***Dykes***

Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled fuel. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of fuel that may reach it. A plastic tarp can be placed on and at the base of the dyke such that fuel can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly a dyke may not be necessary and sorbents can be used to soak up fuels before they migrate away from the source of the spill.

### ***Trenches***

Trenches can be dug out to contain spills as long as the top layer of soil is thawed. Shovels, pick axes or a loader can be used depending on the size of trench required. It is recommended that the trench be dug to the bedrock or permafrost, which will then provide containment layer for the spilled fuel. Fuel can then be recovered using a pump or sorbent materials.

## **2) Containment of Spills on Water**

Spills on water such as rivers, streams or lakes are the most serious types of spills as they can negatively impact water quality and aquatic life. All measures need to be undertaken to contain spills on open water.

### ***Booms***

Booms are commonly used to recover fuel floating on the surface of lakes or slow moving streams. They are released from the shore of a water body to create a circle around the spill. If the spill is away from the shoreline a boat will need to be used to reach the spill, then the boom can be set out. More than one boom may be used at once. Booms may also be used in streams and should be set out at an angle to the current. Booms are designed to float and have sorbent materials built into them to absorb fuels at the edge of the boom. Fuel contained within the circle of the boom will need to be recovered using sorbent materials or pumps and placed into barrels or bags for disposal.

## ***Weirs***

Weirs can be used to contain spills in streams and to prevent further migration downstream. Plywood or other materials found on site can be placed into and across the width of the stream, such that water can still flow under the weir. Spilled fuel will float on the water surface and be contained at the foot of the weir. It can then be removed using sorbents, booms or pumps and placed into barrels or plastic bags.

## ***Barriers***

In some situations barriers made of netting or fence material can be installed across a stream, and sorbent materials placed at the base to absorb spilled fuel. Sorbents will need to be replaced as soon as they are saturated. Water will be allowed to flow through. This is very similar to the weir option discussed above.

Note that in some cases, it may be appropriate to burn fuel or to let volatile fuels such as gasoline evaporate after containment on the water surface. This should only be undertaken in consultation with, and after approval from the INAC or lead agency Inspector.

## **3) Containment of Spills on Ice**

Spills on ice are generally the easiest spills to contain due to the predominantly impermeable nature of the ice. For small spills, sorbent materials are used to soak up spilled fuel. Remaining contaminated ice/ slush can be scraped and shovelled into a plastic bag or barrel. However, all possible attempts should be made to prevent spills from entering ice covered waters as no easy method exists for containment and recovery of spills if they seep under ice.

## ***Dykes***

Dykes can be used to contain fuel spills on ice. By collecting surrounding snow, compacting it and mounding it to form a dyke down slope of the spill, a barrier is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel can then be pumped into barrels or collected with sorbent materials.

## ***Trenches***

For significant spills on ice, trenches can be cut into the ice surrounding and/or down slope of the spill such that fuel is allowed to pool in the trench. It can then be removed via pump into barrels, collected with sorbent materials, or mixed with snow and shovelled into barrels or bags.

## ***Burning***

Burning should only be considered if other approaches are not feasible, and is only to be undertaken with the permission of the INAC or lead agency Inspector.

#### **4) Containment of Spills on Snow**

Snow is a natural sorbent, thus as with spills on soil, spilled fuel can be more easily recovered. Generally, small spills on snow can be easily cleaned up by raking and shovelling the contaminated snow into plastic bags or empty barrels, and storing these at an approved location.

##### ***Dykes***

Dykes can be used to contain fuel spills on snow. By compacting snow down slope from the spill, and mounding it to form a dyke, a barrier or berm is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. The collected fuel/snow mixture can then be shovelled into barrels or bags, or collected with sorbent materials.

#### **5) Worst Case Scenarios**

Dealing with spilled fuel which exceeds the freeboard of a dyke or barrier would present a possible worst case scenario for the study site. To contain the overflow, a trench or collection pit would have to be created downstream of the spill to contain the overflow.

Another worst case scenario would be an excessive spill on water may be difficult to contain with the booms present at the site. In this case, an emergency response mobile unit would have to be called in to deal with the spill using appropriate equipment.

#### **D. Procedures for transferring, storing, and managing spill related wastes.**

In most cases, spill cleanups are initiated at the far end of the spill and contained moving toward the centre of the spill. Sorbent socks and pads are generally used for small spill clean up. A pump with attached fuel transfer hose can suction spills from leaking containers or large accumulations on land or ice, and direct these larger quantities into empty drums. Hand tools such as cans, shovels, and rakes are also very effective for small spills or hard to reach areas. Heavy equipment can be used if deemed necessary, and given space and time constraints.

Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section are available in the spill kits located at Camp Unknown. Following clean up, any tools or equipment used will be properly washed and decontaminated, or replaced if this is not possible.

For most of the containment procedures outlined in Section C, spilled petroleum products and materials used for containment will be placed into empty waste oil containers and sealed for proper disposal at an approved disposal facility.

#### **E. Procedures for restoring affected areas**

Once a spill of reportable size has been contained, camp manager will consult with the INAC or lead agency Inspector assigned to the file to determine the level of cleanup required. The Inspector may require a site specific study to ensure appropriate clean up levels are met. Criteria that may be considered include natural biodegradation of oil, replacement of soil and revegetation.

Source: <http://www.aadnc-aandc.gc.ca/eng/1100100024236/1100100024253>