# 2.4 Environmental Occurrences

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Releases of radioactive and regulated materials to the environment are reported to DOE and other federal and state agencies as required by law. The specific agencies notified depend on the type, amount, and location of each event. All emergency, unusual, and off-normal occurrences at the Hanford Site are reported to the Hanford Site Occurrence Notification Center. This center is responsible for maintaining both a computer database and a hardcopy file of past event descriptions and corrective actions. Copies of occurrence reports are made available for public review in DOE's Public Reading Room located in Richland, Washington. The following sections summarize some of the off-normal environmental occurrences that happened during 2002. For each occurrence, the title and report number from the Hanford Site Occurrence Notification Center is given.

## 2.4.1 Emergency Occurrences

Emergency occurrences are defined in DOE Order 232.1A as "the most serious occurrences and require an increased alert status for onsite personnel and, in specific cases, for offsite authorities." There were no environmentally significant emergency occurrence reports filed during 2002.

## 2.4.2 Unusual Occurrences

An unusual occurrence is defined by DOE Order 232.1A as "a non-emergency occurrence that exceeds the off-normal occurrence threshold criteria and is related to safety, environment, health, security or operations." There were no environmentally significant unusual occurrence reports filed during 2002.

## 2.4.3 Off-Normal Occurrences

The DOE order describes off-normal occurrences as "abnormal or unplanned events or conditions that adversely affect, potentially affect, or are indicative of depredation in the safety, safeguards and security, environmental or health protection, performance or operation of a facility." Two off-normal occurrences with environmental impacts not discussed in other sections are discussed here.

- Spread of contamination discovered after high winds (RL-BHI-DND-2002-0002).

  On Monday, January 21, 2002, a yellow radioactive-material trash bag was observed near a fence of the F Reactor in the 100-F Area. A radiation control technician removed the bag, and a cursory contamination survey revealed speck contamination and a contaminated tumbleweed near the bag. As a result, a comprehensive survey was performed of the entire F Reactor protected area. This survey revealed 36 spots of contamination that ranged from 20,000 to 380,000 disintegrations per minute per probe area. The spots were all beta-gamma radiation. At the time, excavation of the 105-F Fuel Storage Basin was occurring, and the specks were suspected to have originated from this excavation site. The excavation site was posted as a High Contamination Area. Despite the application of soil fixatives to the excavation area on Saturday, January 19, winds in excess of 15.6 meters per second (35 miles per hour) on Sunday, January 20, are suspected to have resulted in the transport of the contaminated material. The contaminated specks were removed via tape presses. After this occurrence, several measures were taken to minimize future spread of contaminated material. A radiological buffer area around the excavation site was expanded to include the entire area within the site's perimeter fence. Contamination monitoring is now required upon exiting the buffer area. Since the commercial soil fixative failed to adequately stop the spread of contaminated material, additional types of soil fixatives are now being applied to excavation sites.

- Removal of a contaminated water lance at the TX Tank Farm resulted in personnel and soil contamination (RL-CHG-TANKFARM-2002-0053).

  On May 5, 2002, ~2 liters (0.5 gallon) of radioactive liquid spilled from the end of a water lance assembly in the TX Tank Farm, located in the 200-West Area. A water lance is a tool that uses a jet of water to remove saltcake and other deposits from waste storage tank walls. The liquid made contact with a worker's left arm, knee, and shoe. The remaining liquid was deposited onto the ground at the worker's feet. The spill area was marked with paint, roped off, and posted 35 minutes after the spill occurred. The worker was undressed and decontaminated as quickly as possible. The application of a soil fixative helped to immobilize the contamination on the ground. A whole-body count of the worker identified cesium-137 as the main radionuclide in the liquid. The cause of this occurrence was determined to be a leaky O-ring in a joint on the water lance. Liquid seeped through the joint and into the end of the lance while the lance was in the tank. The liquid spilled from the lance when it was removed from the tank. To prevent similar occurrences in the future, the O-ring material will be changed, and the joint will be welded.