

### 3 ENVIRONMENTAL OCCURRENCES

There were three incidents with environmental implications during 2004 at the STM site.

At the STM site on March 11, 2004 at NREL's Thermal Test Facility, approximately 20 gallons of dilute propylene glycol overflowed from a catch basin at an outdoor boiler pad and seeped into the ground. The overflow resulted from a malfunction in a hot water recirculation loop in which the pressure relief valve stuck open. All of the solution percolated into the ground before reaching surface water; no soil or groundwater contamination occurred because of the low environmental toxicity of propylene glycol. The direct cause of the overflow was a failed pressure relief valve. In addition, a computer software crash contributed to the problem, and the root cause was determined to be the lack of any way of knowing if a pressure relief event is occurring from inside the TTF. Corrective actions taken included modifying procedures to require the operator to shutdown the boiler in the event of a software or computer malfunction or power failure, adding a temperature limit controller to automatically shut down the boiler if a pressure relief event is occurring, and replacing the faulty pressure relief valve combined with inspecting it more frequently.

At the STM site on May 6, 2004, natural gas accumulated (at non-hazardous levels) inside a laboratory at the Field Test Laboratory Building due to a partially open laboratory gas valve in a biological safety cabinet. The cabinet was cluttered, increasing the potential that a gas valve could be inadvertently opened. The valve was shut off, gas monitoring was done; there was no detectable concentration by the time ES&H staff arrived with the meter. The lab was closed and allowed to ventilate normally. To minimize the chance of recurrence, the cabinet was cleared of unneeded items and electrical cords were contained.

At the STM site on June 21, 2004, a researcher at the FTLB set a controller for a solvent drying activity at an excessively high setting to promote rapid heat up of the apparatus. The researcher left the lab, forgetting to turn the setting on the equipment back down to a low level. The apparatus overheated, resulting in a brief, small, contained flame. Any emissions resulting from the fire were negligible, as the quantities of materials in the apparatus were very small (e.g. 400 ml of solvent was used). Corrective actions included revising procedures for conducting work and communication between organizations using the equipment, additional training of staff operating the equipment, and additional oversight. The need for over temperature controls on the apparatus was also being considered.