

United States Government

Department of Energy

memorandum

DATE: April 16, 1996

REPLY TO
ATTN OF: EH-53 (R. Sastry, 301-903-4664)

SUBJECT: Chemical Safety Concerns / Search of Occurrence Reporting and Processing System (ORPS)

TO: Distribution

Significant Occurrences March, 1996

Class 1:

[Ames Laboratory](#) - employees exposed to hydrogen sulfide gas, one hospitalized

Class 2:

[Los Alamos National Lab](#) - employee singed when container of isopropyl alcohol and potassium hydroxide ignites

[Stanford Linear Accelerator Center](#) - hydrogen retort explosion injures employee

Additional:

There was sodium leak and fire at Hanford. There was also a possible carbon monoxide exposure at Hanford. Additionally two potential USQs were noted at Hanford. There were three inadvertent acid transfers at Savannah River.

These occurrences are further described below with additional information, including Occurrence Report (OR) numbers, provided in [Table 1](#).

. A search of ORPS for occurrences having chemical safety relevance conducted for the month of March 1996 produced 36 reports representing potential chemical safety concerns. These occurrences are listed in [Table 1](#). Nine occurrences were categorized as "Unusual" with the remainder identified as "Off-normal." The Office of Environmental Management (EM) was Cognizant Secretarial Office (CSO) for 20 occurrences. Defense Programs (DP) and Nuclear Energy (NE) each reported six, Energy Research (ER) had three, and Fossil Energy (FE) one. Three of the NE occurrences took place at the Portsmouth Gaseous Diffusion Plant. In recent months there has been some confusion as to whether or not Paducah and Portsmouth are required to report to ORPS and are reporting consistently. There is also a question as to whether NE or the Office of Uranium Enrichment (UE) is the CSO responsible for these facilities. The information presented in this report is based entirely on ORPS and the designated CSO is taken directly from the occurrence report. This CSO designation may change after the distribution of this monthly memorandum, and this change will be reflected in Quarterly and Annual Reviews.

In order to determine which chemical safety occurrences represent more important (significant) Levels of Concern, a classification scheme has been developed. The definitions of these Classes are as follows:

Class 2 Occurrences characterized by minor injury (first aid) or exposure, or minor environmental damage; also occurrences that were near misses (where one additional safety barrier remained to prevent consequences) to those in Class 1;

Class 3 Potential precursors to the occurrences in Class 1 or 2;

Class 4 Minor occurrences such as leaks, spills, or releases, which may be significant in their frequency of occurrence though not in their consequences.

There was one Class 1 occurrence and two Class 2 occurrences reported during March. There were 21 Class 3 occurrences. Among the Class 3 occurrences, in addition to those noted previously, was the receipt of a notice of 61 violations of waste management regulations at the INEL. There were two ammonia releases - one at Rocky Flats and one at ETEC. There was a propane or natural gas release at Hanford. There were two UF₆ releases at Portsmouth.

Summaries of Class 1 and 2 Occurrences:

Employee Hospitalized after Exposure to Hydrogen Sulfide (ER): (CH--AMES-AMES-1996-0001)

On March 13, 1996, at Ames Laboratory, as an employee was transferring hydrogen sulfide gas, gas began to leak from the cylinder. Fumes from the cylinder caused one employee to be overcome and three others to receive exposures requiring a response to the emergency room of the local hospital. One employee was held overnight for observation. The release caused the evacuation of the building involved and two others. Safety staff tested for gas downwind as far as 1/4 mile; no detectable material was observed, the lower detection limit being 1 ppm. The amount released was estimated at 1.5 lb.

Ignition of Isopropyl Alcohol and Potassium Hydroxide (DP): (ALO-LA-LANL-CMR-1996-0011)

On March 12, at Los Alamos, a bath of isopropyl alcohol saturated with potassium hydroxide ignited and produced a small fire. The flash from the ignition of the bath singed an employee's hair. The caustic bath was contained within a polyethylene container and was covered with a polyethylene lid. The bath was created approximately 2 years prior to the occurrence and was used to clean organic materials from laboratory glassware used in analytical chemistry work. Facility management initiated a notice for all divisions within the Laboratory that warned of the incident. The notice also provided precautionary actions for those personnel who use similar caustic baths. Investigation is continuing as to the source of the ignition.

Hydrogen Retort Explosion (ER): (SAN--SU-SLAC-1996-0005) On March 6, at the Stanford Linear Accelerator, a hydrogen retort exploded during ignition of burn-off gas. One employee experienced hearing loss in one ear and a shoulder injury from being blown into a cabinet. A second employee was checked by Medical and authorized to return to work. Investigation of failure modes and procedures started, and production was halted until resolution of cause.

Additional information regarding these occurrences and others will be discussed in an upcoming Quarterly Review. As occurrence reports are finalized, lessons learned will be communicated.

[Signature of]

Rama Sastry
Office of Field Support

Attachment: [Table 1](#)

Note to Distribution:

This document is being electronically distributed. If you want to receive the document electronically and/or to be removed from the hard copy distribution list, to add another person, or to change your address, please contact **John Usher** 516-344-2096, Fax: 516-344-3957, E-mail: usher@bnl.gov at Brookhaven National Laboratory.

Web conversion by: Joe Carbonaro

Web page design: Joseph Kahn