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NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: November 1, 1977

Forwarded to:  
Honorable Brock Adams  
Secretary of Transportation  
Washington, D. C. 20590

SAFETY RECOMMENDATION(S)  
I-77-2, I-77-3

At 7:21 a.m., on March 31, 1977, 29 cars of a Seaboard Coast Line (SCL) train derailed in a rural area near Rockingham, North Carolina. Two derailed flatcars were each carrying two 4,000-gallon steel cylinders containing radioactive uranium hexafluoride. All cylinders broke away from the flatcars during the derailment and were scattered among the wreckage. The derailment also triggered a fire involving a carload of ammonium nitrate. One person was injured as a result of the accident, and property damage was estimated to be \$750,000.

The National Transportation Safety Board investigated this accident and found that no single authority directed or coordinated the handling of the emergency, that communications among the personnel at the scene were ineffective, and that there were serious delays in evaluating the radiation hazard.

Within about 10 minutes after the derailment, the SCL dispatcher notified other railroad personnel, the local police and fire officials, the Manufacturing Chemists Association's Transportation Emergency Center (CHEMTREC), the U.S. Energy Research and Development Administration (ERDA), and the State Highway Patrol of the accident and the radioactive materials being carried. The Rockingham Fire Department arrived at the accident site 29 minutes after the derailment and immediately began firefighting operations. Five minutes later, the Rockingham police and a State Highway Patrol officer arrived at the scene, and began controlling access to the accident site. Five minutes later, the SCL's senior official at the accident arrived to supervise removal of the wreckage. Wrecking crews began operations approximately 2 hours after the derailment.

Shortly thereafter, a State Highway Patrol radiological unit arrived at the scene, and made a walk-around survey with DDV-700 "gamma" meters. The radiological unit did not know the location of the four cylinders

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during the survey. More than 3 hours after the accident, an Army Ordnance unit from Ft. Bragg, North Carolina, arrived and made an aerial reconnaissance of the accident area in a helicopter to locate the cylinders. Approximately 3 hours and 40 minutes after the derailment, the unit found the first cylinder in the wreckage. Four hours and 20 minutes after the derailment, another cylinder with two large dents was located near the fire. Readings on an Army "alpha" meter showed 1,500 counts per minute (cpm) which is considered an unsafe radiation level. An unseen leak in the cylinder was suspected. Within 10 minutes State and Army personnel decided to halt the fire-fighting and cleanup operations because of the possible radiation danger. Until this time, railroad workers and public officials had been working in the wreck area near the fire and the cylinder.

Seven hours after the derailment, ERDA representatives from Oak Ridge, Tennessee, arrived at the site, and determined conclusively that no radioactive materials had escaped from the cylinders. The high "alpha" count was attributed to the meter's sensitivity to heat from the fire.

At least 17 Federal, State, local, and private agencies responded to this hazardous materials emergency. Until the Army realized the possibility of the radiation danger, each agency operated relatively independent of the others. No representative from any organization assumed overall command of the operations at the scene until the Army officer disclosed the possibility of a radiation danger. At that time, most of the parties assumed the Army had taken charge, and followed the officer's instructions. The emergency operations were stopped for 2 1/2 hours until the ERDA personnel determined that there had been no radiation leakage.

In their postaccident reports, both Federal and State agencies acknowledged this command and coordination problem. They also reported that communications in and out of the accident scene were inadequate.

While there was no leakage of radioactive materials in this accident, the onscene command problems and the delays in correctly identifying the condition of the radioactive materials shipments indicate safety problems which, the Safety Board believes, require attention. Personnel were operating in an area that might have been contaminated for over 2 hours before the first preliminary measurements were made. The responsibilities of each organization at the scene were not clear, and there appear to be no local or nationwide plans or guidelines for coordinating emergency operations when radioactive materials are involved in an accident. The lack of coordination and a delay in determining the radiation danger could result in overexposure to radiation if radioactive materials escape in future accidents.

To reduce the risk of exposure to radioactive materials spills in transportation accidents, the National Transportation Safety Board recommends that the Secretary of Transportation, with the assistance of appropriate Federal and State agencies:

Develop and disseminate guidelines for emergency response procedures in transportation accidents involving radioactive materials that will coordinate onscene leadership during all stages of the emergency and identify the responsibilities of the responding Federal, State, and local agencies in reducing injury and damage in such emergencies. (Class II, Priority Followup) (I-77-2)

Establish procedures to minimize the time required to identify radiation dangers at accident sites when radioactive materials are involved. (Class II, Priority Followup) (I-77-3)

BAILEY, Acting Chairman, McADAMS, HOGUE, and KING, Members, concurred in these recommendations.



By: Kay Bailey  
Acting Chairman