

N-waste dump reopened

The nuclear waste dump at Hanford, Wash., will reopen early next week, Gov. Dixy Lee Ray said. The disposal facility, one of three of its kind in the nation, was closed by the governor Oct. 4, after the State Patrol reported safety violations involving trucks carrying nuclear wastes. Ray said medical institutions and medical research communities must have a storage site for low-level radioactive residue from efforts to save the lives of cancer, leukemia, and other patients.



CITY OF CAMBRIDGE
INTEROFFICE CORRESPONDENCE

To City Manager James L. Sullivan

Date November 16, 1979

From Chief Daniel J. Reagan
Fire Department

Reference

Subject Radioactive Waste

Enclosed is information re Radioactive Waste that this department has obtained. Future information, if any, will be made available to your office immediately.

Copy to:

Police Traffic Division

RECEIVED

Nov 16 2 18 PM '79

OFFICE OF THE
CITY MANAGER



CITY OF CAMBRIDGE
INTEROFFICE CORRESPONDENCE

To Chief Daniel J. Reagan

Date November 12, 1979

From Deputy Chief Ernest A. Gelinas

Reference

Subject Hazardous Materials

Interex Corporation
3 Strathmore Road
Natick
237-6650

Bill Copp - John Kemp

Route from MIT

Albany Street to Massachusetts Avenue, right on Massachusetts Avenue to Bridge into Boston, to Route 9.

Route from Harvard

Divinity Avenue, right on Kirkland Street to Beacon Street, to Hampshire Street, to Bridge into Boston, to Route 9.

Cambridge Fire Department

Nov 15, 19 79

From: *Fire Prevention*

To: THE CHIEF OF DEPARTMENT

Subject: *Radioactive wastes*

Sir:

Following is a list of establishments which generate radioactive wastes. Many are such small quantities as to be negligible. They are shipped to Texas by trucks, packed in metal 30 gal. drums in a plastic liner. Small vials are packed in absorbing material in drums

Respectfully,
Ernest G. Gehring
Deputy Chief

HARVARD UNIVERSITY
UNIVERSITY HEALTH SERVICES

75 Mt. Auburn Street
Cambridge, Massachusetts 02138

October 29, 1979

Mr. William Cremins
Chief, Cambridge Fire Department
Cambridge, Mass. 02138

Dear Chief Cremins:

The following information is submitted in response to your request for details of the disposition of radioactively contaminated materials resulting from research with radioactive tracers at the Cambridge campus of Harvard University.

Most of the research is conducted at the laboratories of the Biology Department; a small fraction is done in the Chemistry department. The contaminated materials are divided into liquid residues primarily resulting from liquid scintillation counting, and solid materials, all with trace amounts of radioactivity.

The liquid scintillation method is used primarily for radiations that are too weak to be efficiently measured by any other detector, such as a Geiger counter. The radioactivity, which is contributed primarily by Carbon-14 and Hydrogen-3 must be dissolved directly in the detector medium, generally an organic liquid with a toluene base. Here the energy of the radiation is converted into light, which is then detected by a photoelectric detector. The nuclear radiations do not penetrate through the vial, and therefore through any drum in which the vials are packed.

The radioactive tracers, following their use in an experiment, are measured for their radioactivity by dissolving them in small volumes (10 ml or less, about 1/3 of an ounce) of liquid scintillation "cocktail" contained in a small capped bottle. After the bottle is counted, it is placed in a 30 gallon drum for disposal or the vials are emptied into a gallon jug which is then put into the drum. The drum must meet the requirements of the U.S. Department of Transportation for shipping radioactive materials (spec. 17H & 6J) and the contents include enough absorbent material (commercial product Speedi-Dri) to hold double the liquid contents in the event of an accident leading to breakage of all the containing vessels. Drums are bolted for shipping. All drums are labelled "radioactive" and the labels also give the contents.

The biology department produces about 6 drums of spent scintillation fluid per month. Four may contain vials, about 2000/drum which thus contains 5 gallons of flammable solvent; the other two contain jugs with about 8 gallons of solvent. An additional 6 drums of dry contaminated materials are produced. The scintillation solvents are handled as flammable liquids and stored in a room equipped with a sprinkler system in the event of fire.

The main storage area for the drums containing flammable liquids awaiting disposal is in room A-020 on the ground floor of the biological laboratories. Drums can also be stored in the main solvent supply room of the laboratories. Other areas are limited to the storage of solid and non-flammable liquid radioactively contaminated research materials. They are the sub-basement, room SP-3; and a storage closet opposite B-548. These rooms are locked and marked with a "Radioactive Material" sign. Some short-lived radioactivity is stored in these rooms for decay, i.e. kept until the radioactivity is no longer detectable. This may take from a few weeks to a few months. About 50 gallons of aqueous solutions are stored in this way in 1 gallon jugs. The radioactive isotopes include phosphorous-32 and iodine-131. There may be a total of 50-100 millicuries of activity. There are also about 20-30 drums containing dry papers, plastics and glassware slightly contaminated with short-lived radionuclides.

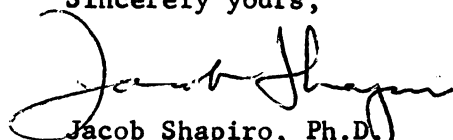
The chemistry department uses much smaller quantities of radioactive materials than the biology department, and no central storage area exists. About two drums per month are generated. The materials are packed in the drums for shipment by personnel from the Department of Environmental Health and Safety on selected days and the drums are brought to the biology building loading dock or the chemistry loading dock on the day they are picked up.

The drums are presently supplied and transported from Harvard by the Interex Corporation in their vehicle and taken to their warehouse in Natick. There they are transferred to a 40' van to await shipment to a disposal site. This truck displays a flammable-dangerous sign when needed as well as a "radioactive" placard when it carries packages requiring such a posting on the truck.

Shipments are made from the Cambridge Campus every two weeks, so the inventory is normally low, about 3 drums of scintillation vials, containing approximately 5 gallons each of toluene or xylene based liquid scintillation counting solution; 1-2 drums containing 8 gallons each of bulk flammable solvents; and 1-2 drums of dry waste consisting of slightly contaminated paper, plastics and glassware. Drums contain mainly Hydrogen-3 and Carbon-14. There is some Iodine-125 and Chromium-51. Radioactivity content is of the order of one twentieth of a millicurie per drum.

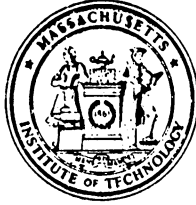
The route is from the biological laboratories on Divinity Avenue to Kirkland Street to Hampshire to Washington to Mass. Avenue to the Harvard Bridge into Boston. The truck is placarded with a Flammable Liquids Sign or Radioactive Sign when required by regulations.

Sincerely yours,



Jacob Shapiro, Ph.D.
Radiation Protection Officer

Name	Person Contacted	Tel. No.	Radio-Active Material	How Much	Where Stored	Route out of City	Disposal Company
Cambridge Hospital	Capt. Ellis		Yes	1/2 full drum 3-year use	Lab	Cambridge St. to Hampshire St. to Boston	Interex
Polaroid	Francis Foster Harry Brown Bill Dowdy	577-4533		1 drum contain- ing 6 milli- curies (.006) 1000th of curie	750 Main St.	Main Street to Boston	Interex
Clinical Assays 620 Memorial Dr.	John Sullivan	492-2526	Yes	3 drums solid waste (broken vials) 12 drums each 2 weeks	Basement room (Sprinklered)	Vassar St. to Mass. Ave. to Boston	Interex
American Science & Engineering	Chuck Nickles	868-1600	Yes	Very small amount	Basement of 955 Mass. Ave.	Mass. Ave. to Boston	Interex
Draper Labs	George Mayo	258-1618	Yes	Radiated by-products	Various Locations Labs	Broadway to Boston	Interex
M. I. T.	John Fresina	253-4736	Yes	50 drums 6 mo. supply	Albany St. (sprinklered bldg.)	Albany St. to Mass. Ave. to Boston	Interex
Harvard	Dr. Shapiro		Yes	8 drums (30 gals.) 3rd floor 10 drums (base ment)	Divinity Ave. 3rd floor & basement	Divinity Ave. to Kirkland to Beacon to Hamp- shire to Boston	Interex
Arthur D. Little Acorn Park 30 Memorial Dr.	Don Lindsay	864-5770 Ext. 2330	Yes	5 drums 100 drums	Basement	Main St. to Boston	Interex



SAFETY OFFICE
ROOM E19-207

CAMBRIDGE, MASSACHUSETTS 02139
(617) 253-4736

October 11, 1979

Chief William Cremins
Cambridge Fire Department
491 Broadway
Cambridge, Mass. 02138

Dear Chief Cremins:

Yesterday, Deputy Chief Gelinas asked us to report to you the status of our storage of waste flammable liquid scintillation counter fluid now that the disposal site in Washington State has been temporarily closed. We are operating within the requirements set down by the Fire Department for storage of these types of materials at the time our permits and licenses for flammables are renewed each April.

Currently, we store this waste in a separate room on the ground floor of Bldg. NW-13, which is located on Albany Street. This area is equipped with automatic sprinklers. There is capacity to store about 3 months accumulation of waste before it is removed by the disposal contractor. At present, we have only about 6 weeks accumulation, or 50 fifty-five gallon drums. These drums, as explained below, each have only about 5 gallons of flammable fluid in them.

If we reach maximum storage capacity before the Washington disposal site is re-opened, our contingency plan is to store these wastes at five other sites which are designed for flammable liquid storage. We would have capacity to store 70 drums total at these sites. We have information that the Washington disposal site will probably be re-opened in about 3 weeks, and therefore, we may not have to invoke this contingency plan. If the situation does worsen, we would not store in excess of our safe storage capacity; but, would seek other solutions.

From a fire safety standpoint, we feel quite comfortable that the method of storing these wastes presents minimum hazard. The waste scintillation fluid is contained in vials of 10cc capacity which have screw caps. The vials are placed inside of a gasketed 17H U.S. D.O.T. heavy walled steel drum which has a plastic liner and is 1/2 filled with diatomaceous earth. The diatomaceous earth is

Chief William Cremins
Page 2.

an absorbent which has the capacity of absorbing 2½ times the total volume of liquid in each drum which is only 5 gallons of scintillation fluid. This containerization is in accordance with Nuclear Regulatory Commission requirements.

The possibility of any fluid leaking out of a drum is extremely remote. The fluid would have to leak from a vial, not be absorbed by the diatomaceous earth, penetrate the plastic liner and then eat through the drum. Protection from an exposure fire is afforded by storage in separate rooms equipped with automatic sprinklers.

We will continue to operate in accordance with our many permits and licenses and as always, will work with the Fire Prevention Division to minimize hazardous exposure to the community and fire fighters.

By memo, we have asked all our researchers to implement steps that would conserve the use of these fluids which will result in less waste being generated.

Sincerely,



John M. Fresina
Director, Safety Office



Murray Bolton
Radiation Protection Officer

JMF-MB/cec

cc: P.A. Stoddard
Dr. M. Chalfen
R. Alberty
E. Gelinis, Cambridge Fire Dept. ✓



CITY OF CAMBRIDGE

CAMBRIDGE, MASSACHUSETTS 02139
Tel. 498-9011

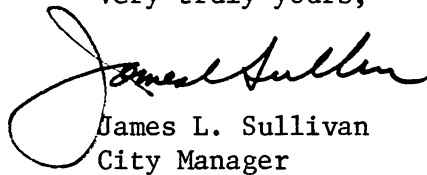
EXECUTIVE DEPARTMENT
JAMES L. SULLIVAN
City Manager

November 19, 1979

To the Honorable, the City Council:

With respect to Awaiting Report Item No. 27, I am enclosing information provided by the Fire Department relative to the storage and transport of radioactive wastes within the City. I believe that the communication is self-explanatory.

Very truly yours,



James L. Sullivan
City Manager

JLS/mbf
Encs.

Agenda #20

S-615

Response to Awaiting Report No. 27 re: storage
and transport of radioactive wastes within the
city.

In City Council,
November 19, 1979

11/19/79

Placed

on

File