UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F.K. Federal Building, Boston, MA 02203

MEMORANDUM

DATE:

SUBJ: RCRA CEI Inspection at University of Omnium located in Narcissus, Omnium

FROM: Environmental Protection Specialist
RCRA Support Section

TO: Senior Compliance/Enforcement Officer
RCRA Support Section

I. General Information

A. Facility Name: University of Omnium - Medical School Narcissus, Omnium

B. RCRA Contacts: Supervisor
Hazardous/Regulated Waste Mgt.
Manager
Environmental Services

C. Date of Inspection:

E. Purpose of Inspection: CEI

F. Personnel Participating in Inspection: U.S. EPA - Five participating inspectors

II. RCRA Reporting/Information Requirements:

A. Facility I.D. No.:
B. Type of Operation: Generator
C. Notification of Operation: May 30, 1992

III. Facility Description:

University of Omnium's School of Medicine is located adjacent to Narcissus Hospital. This location is not contiguous with other Omnium property and maintains a separate EPA identification number. Omnium is a private university consisting of several separate schools that provide education in the fields of medicine, business, environmental studies, etc. Omnium has obtained three separate EPA identification numbers to cover its waste activities at the campus.

Waste Processes/Handling

The School of Medicine generates various types and amounts of hazardous wastes from both research and educational activities. These wastes are generated at on-site laboratories and may contain medical/pathological wastes, chemical wastes, radioactive wastes or mixed radioactive wastes. Wastes are accumulated in small sized containers and stored for lab packing.

IV. General Observations:

At approximately 8:30 a.m. on May 4, five inspectors representing EPA arrived at the university's Office of Environmental Health and Safety. We met with the Director of the Office of Environmental Health and Safety, the Manager of Environmental Services and the Supervisor for Hazardous and Regulated Waste Management. The Director stated that he has been at the University for approximately ten months. We asked him how many environmental staff worked at the facility. He stated that the Office of Environmental Health and Safety was staffed with approximately fifty people of which ten worked directly on waste issues at the University.

We briefly discussed our agenda for the day and asked how many laboratories were located at the University. The Director estimated that the University had a total of approximately 1,200 laboratories. The Director estimated between 600 and 800 of these laboratories were operated at the Medical School by Principal Investigators (PIs). According to the Director, the PIs were "talented" individuals who received grants for projects funded by private industry or government agencies such as NIOSH, EPA, etc. The Director estimated that the University also had approximately 270 laboratories that generated "radioisotopes".

University of Omnium asked us if there was a regulatory distinction between the application of the hazardous waste requirements at an institutional facility such as Omnium as compared to industrial facilities. We informed them that we were not aware of any distinctions in the regulations. We told them that we would inspect the School of Medicine and conclude the inspection with a review of all the hazardous waste records for both the Medical School and the Science campuses.

We were led to the School of Medicine's hazardous waste storage area to begin the inspection. This area was referred to as the "LEPH: an acronym for "Laboratory of Epidemiology and Public Health."

After we inspected the LEPH, we divided into two groups to hasten the inspection of this facility. Due to the number of laboratories located at the School of Medicine, we decided to walk each floor and randomly select laboratories for closer inspection. We tried to select and inspect at least one of each type of laboratory during our inspection.

Group 1 began their inspection at the Cell Biology laboratory first. We entered this laboratory and observed a photography room which was not in use at the time of inspection. We inspected this room and observed fixer and developer solutions at this area. No wastes were observed in

storage. The contact person for this area was identified as Mr. X.

We walked to Room B next. We entered this room and met a post-doctorate student working in this laboratory. We asked him to describe what types of wastes were generated in this laboratory. He stated this laboratory generated acetic acid, methanol and formaldehyde. He stated that he used small amounts of a methanol "transfer buffer" in his experiments. The "transfer buffer" consisted of 15% tris cyanomethane (hydroxy methyl acetonitrile), 71% glycil and 20% methanol according to markings on the virgin product. We observed one 1-liter brown glass bottle accumulating approximately 1 cup of waste transfer buffer solution.

We also met a lab technician working in this area. She stated that phenol waste was also generated in this location from DNA extractions. She stated that the phenol waste consisted of waste phenol and chloroform. We observed no phenol waste in the room at the time of inspection.

We walked to Laboratory Rooms I and 40 next. We entered these labs and met a student working in this area. We asked her to describe the types of activities conducted in this laboratory. She stated that DNA research was conducted at this area. We inspected this area and observed two white plastic five (5) gallon containers accumulating more waste transfer buffers previously identified at Room B. We observed one full container and a partially filled second container. The second container had an open funnel inserted in the opening and was not sealed. We observed a 1-liter glass container accumulating phenol waste and one 4-liter glass container marked "chemical and acid waste".

We inspected Room I-257 next. This laboratory was a cancer drug research lab. Dr. S was the principal investigator in charge of this area. We inspected the laboratory and found numerous cylinders identified as poisonous gas marked on the cylinders or the labeling. We identified cylinders containing phosgene gas (dated August 18, 1982), anhydrous ammonia, anhydrous dimethylamine, chlorine H.P., butadienne, hydrogen chloride and carbon monoxide (See Photograph 1). We also observed one 4-liter metal container accumulating waste chloroform inside the fume hood. We asked Dr. S if he used the gas cylinders for his cancer drug research. Dr. S stated "no". He informed us that these cylinders were "there for some time". We asked Dr. S if "some time" meant years. Dr. S stated yes, but could not tell us how many. We asked him why these containers were not removed. Dr.S stated that the suppliers refused to take the cylinders back.

We entered a laboratory located on the left side of the hallway prior to entering the Building. We inspected this room and observed that this laboratory was in the process of moving. We found no one in this area who we could question. We observed numerous chemicals that appeared to be virgin materials and assorted lab equipment packed in boxes for removal. The name(s) "K and S" were identified on the equipment. We observed a 1-liter container marked as phenol waste stored inside the laboratory hood. We also observed assorted chemical bottles stored under the sink that also appeared to be virgin product but were not yet packed.

We entered the S Building next. Internal medicine was the medical specialty conducted at this building according to the Director. We inspected Room X, one of the internal medicine laboratories, and observed one 1-liter bottle accumulating waste phenol/chloroform.

We inspected a Room in the Pharmacology Department next and met a person at this area, who stated that the Principal Investigator for this area was Dr. P. We observed a High Pressure Liquid Chromatography unit in this laboratory. This unit generated waste acetonitrile. We asked where the acetonitrile was stored. She stated that the acetonitrile was disposed in the sink drain.

We walked to Room B27 next. We entered this area to inspect and observed one 4-liter container accumulating waste phenol and one 1-gallon plastic container marked "waste". The waste material was a blue liquid with no other markings. We observed one 1,000-ml flask attached to the "sample out" port of the High Pressure Liquid Chromotography unit that contained a liquid we believed to be sodium saline/sodium azide High Pressure Liquid Chromotography buffering solution used in the equipment. We also observed two additional containers accumulating waste. One container stored approximately 400-ml of waste chloroform and the second container accumulated waste staining agents.

We walked to the 4th floor/Molecular Medicine next. We entered Room 330, the genetics research laboratory. The PI for this laboratory was identified as W on the door. We inspected this laboratory and observed two 4-liter glass containers used to accumulate phenol/chloroform waste, three 4-liter containers used to accumulate ethidium dibromide (non-regulated) and one 1,000-ml bottle used to accumulate "mercapotol ethanol".

We spoke with one of the researchers in this laboratory. We asked him to explain how the types of wastes we observed were generated. He described the laboratory procedure to us. He also stated that new technologies were emerging that would eventually eliminate the use of compounds such as ethidium bromide in genetic research. We inspected some of the virgin chemical bottles in storage and found bottles of phenol product that had exceeded the expiration dates stamped on the bottles.

Group 2 began their inspection at a separate Building. The Building had 10-13 laboratories. We inspected Room 33 first. We observed one 4-liter brown glass container labeled marked "waste chromic/sulfuric" (See Photograph 2). An Omnium escort stated this acid mixture was used to clean glass vials.

We inspected Room 5 next. No waste was observed in this lab. We walked to the fourth floor to Room 4. We inspected this room and observed one container of waste ethidium bromide and one container of waste xylene. We inspected Room 28 next and observed one container marked "phenol/chloro waste only".

We went to the Therapeutic Radiology Building next. The Omnium rep stated that this building had approximately 15-20 labs. We inspected Room H and observed one container of phenol chloroform and one container of ethidium bromide stored in a cabinet located under the counter.

We also observed a small amount of radioactive waste stored at this location.

We inspected Room H3 next. This room was used to collect and store radioactive waste for the entire floor. We inspected Room H8 and observed one container marked "halogenated organic waste- chloroform" and a second container marked "nonhalogenated organic waste - phenol, butanol".

We inspected Room H4 and observed three waste containers stored in this lab. One container was marked and labeled "organic waste". One container was marked and labeled "phenol waste". The last container was marked and labeled as chromic acid cleaning solution.

We went to the sixth floor and observed a hazardous waste storage area in one of the laboratories. Specifically, we observed one 5-gallon container marked "xylene/alcohol (ethanol)". The Omnium rep stated that approximately 3-8 cans of this type of waste are generated each week. There was also one 5-gallon container marked "formalin."

We inspected the "D/R" lab and observed one container of "chromic acid waste" stored in a cabinet under the sink. The container had a hazardous waste label and appeared to have a small amount of waste in accumulation.

We inspected the histology lab and observed one 5 gallon container marked "waste ethyl alcohol with dye".

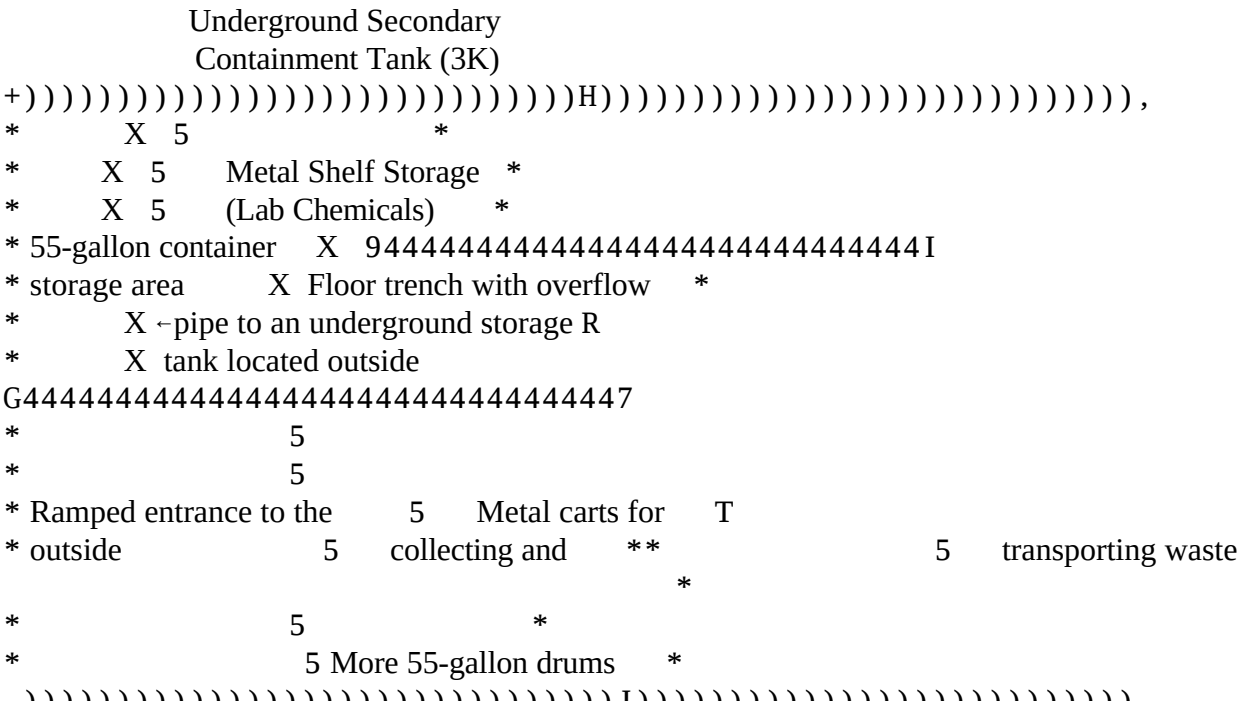
We walked to the anatomic pathology lab. According to the rep, this is the largest generator of hazardous wastes at the School of Medicine. We entered Room 208 and observed six 5-gallon containers stored on the right hand side of the entrance to this room. We observed four 5-gallon white plastic containers stacked four high and two 5-gallon black metal containers stacked two high. We told the rep that the stacking arrangement of the four white plastic containers had the potential to be easily knocked over. The Director had someone remove two of the containers from the stack and place them on the floor beside the two 5-gallon black metal containers (See Photograph 3). We observed two of the plastic containers marked "xylene waste." The other two were marked "formalin waste." The two black metal containers were marked "alcohol waste." None of the six containers we observed were specifically marked as hazardous waste.

We inspected other areas in Room 208 and observed two additional 5-gallon black metal containers. The containers were opened and had white plastic funnels in each bung (See Photograph 4). One container was marked "alcohol waste" and the other container was marked "xylene". The containers were almost full and we observed no hazardous waste markings on either container.

We walked to the lab where DNA synthesis is conducted. We observed no waste in storage at the time of inspection. We inspected the lab for Surgery Obstetrics and Gynecology last and did not observe any hazardous waste in storage at this area.

Hazardous Waste Storage Area:

The hazardous waste storage area was located in Room 156 of the LEPH. The layout of this area was observed as follows:



The rep stated that this area was the less-than-ninety day storage area for the medical staff and was approximately two years old. The room was approximately twenty feet long by fifteen feet wide. This area was marked with signs that indicated "Danger", "Unauthorized Personnel Keep Out" and "No Smoking". We entered the facility and observed fifteen 55-gallon containers with hazardous waste labels (See Photograph 5 for partial view). Eight containers were marked "F003/F005" and dated "April 1994". Three containers were marked "F002/F005" and dated "April 1994". Two containers were marked "F003/F005" and dated "4/29/94" and "5/3/94". The remaining two containers were marked as waste oil.

The storage area was constructed with a spill containment trench (See Photograph 6). The inside of this trench contained a partially elevated pipe. We asked Ms. Weeks what the purpose of the pipe was. Ms. Weeks stated that the pipe connected to a 3,000-gallon tank located outside the building. Ms. Weeks stated that the containment was designed to capture large volumes of wastes that could be generated from firefighting activities.

We observed two 4-shelf metal racks used to accumulate small quantities of laboratory wastes (See Photographs 5, 7 and 8). The storage trays provided secondary containment capacity in the event of spillage or leakage. We observed many containers in storage that did not have a University of Omnium "Hazardous Chemical Disposal Form" attached and were not otherwise

marked with the words "hazardous waste" of the date of accumulation (See Photographs 7 and 8). The disposal forms do not specifically state "hazardous waste" on the form. We asked if these containers stored in the 4-shelf metal racks were waste. The rep stated yes.

We observed and inventoried the following containers in the accumulation area that had either no date of accumulation or the words "hazardous waste" marked on the each container: one 1-liter brown glass container of tetrahydrofuran, one 4-liter glass container marked "Glass-Terg" and "Sulfuric acid-chromic acid cleaner" (See Photographs 8 and 9), one 1-liter glass container of "sulfuric acid" (See Photographs 8 and 9), one 1-liter glass container marked "mercury waste broken thermometers", one container of "picric acid" (See Photograph 8), one container of "trichloroacetic acid" (See Photograph 8), one container of "hydrobromic acid" (See Photograph 8) and one 1-pt container of toluene.

We observed one container dated October 30, 1990 and marked "DAB" waste and a second container marked "OPD" and dated November 12, 1991. The name "Wyatt" was also identified. This container had no markings that identified these wastes as hazardous or other words to describe the contents. We also observed two 150-ml containers dated 12/22/93 that were marked with the following words:

> Dr. R 12/23/93
> Location:SHM Rm:E 918-1736
> Dept. Orthopaedics

The tags on these containers were signed by "George". The constituents accumulated in both containers were identified as: 1% osmium tetraoxide, 1% potassium ferricyanide and 98% water.

We observed one 5-gallon container stored on the bottom shelf of the metal rack. The container had the original product label affixed to it. The label identified the material as "ethyl alcohol UN1170". The words "chemical waste" were marked on the back of this container. No date of accumulation was found marked on this container.

We observed three black steel 5-gallon containers that contained waste xylene for redistillation according to the rep. The containers were affixed with labels marked with the words "hazardous" and identified the accumulation start date and the contents. The accumulation start dates marked on the three containers were April 13, 1994 (two containers) and April 19, 1994. The rep stated that a distillation unit was located in the adjoining room to the Hazardous Waste Storage Area.

We entered the adjoining room to the Hazardous Waste Storage area and inspected the solvent distillation unit. We asked what type of solvents were processed in the unit. The rep stated that the solvent distillation unit was used to process waste containing primarily xylene, paraffin and some tissue. The empty 5-gallon containers were triple rinsed with water and the rinsewaters were discharged to the municipal sewer system. The rep stated that the empty containers were disposed as regular trash.

V. Record Review:

Inspection Records

We reviewed the inspection records for the LEPH Chemical Storage area. The inspection checklist identified the exhaust fan, containers, drain trough and overflow pit as the inspection items. An inspection schedule was found on page 5 of the contingency plan for the medical school. The inspection schedule identified a fire extinguisher, dry chemical system, supply and exhaust fans, and storage containers. The schedule required a yearly inspection of the alarm systems by the University Fire Marshall's office. Neither the checklist or the inspection schedule identified inspection of security devices (e.g. door lock), spill control equipment, or personnel safety/protective equipment. The inspection checklist and schedule did not identify inspection procedures for the secondary containment tank for LEPH 156 nor were any procedures identified to evaluate the integrity of the second containment system.

Hazardous Waste Training Records

We reviewed hazardous waste training records maintained at the facility. We observed one training certificate for 1991. The certificate documented hazardous waste training for the EHS Director and was certified by the State EPA. No other training specific to hazardous waste was found.

We observed two employee sign-in sheets maintained for 1992. One sheet was dated April 28, 1992 and signed by eleven (11) University of Omnium employees. The second sheet was dated May 4, 1992 and signed by (13) University of Omnium employees. The type of training identified on the sign-in sheets was emergency response training for compliance with OSHA 29 C.F.R. § 1910.120. Photocopies of written exams were also found that identified OSHA 29 C.F.R. § 1910.120 training. The test questions referred to OSHA regulations. Hazardous waste management training is not a requirement of OSHA 29 C.F.R. § 1910.120 and is specifically excluded.

A draft "technician training" outline was observed in the training record folder. The draft training outline identified basic hazardous waste identification/management procedures. We found no records that documented "technician training" was administered of that any other type of hazardous waste instruction or training was offered for University of Omnium employees who handled hazardous waste.

Contingency Plan

We reviewed the January 3, 1994 version of the contingency plan. The emergency procedures section of the plan outlined a "large spill" procedure in the plan but does not address response procedures for minor spills. The term "large spill" is not defined. The emergency procedures outlined for large spills do not contain a requirement for the immediate notification of personnel in the immediate area of a spill nor do they describe the use of protective equipment or use of

appropriate safety measures when responding to a "large spill".

The contingency plan did not require the emergency coordinator or his/her designee to immediately identify the character, exact source, amount and real extent of any released materials. The emergency procedures did not require the emergency coordinator or his/her designee to assess possible hazards to human health and the environment or to consider both the direct and indirect effects of the releases, fire or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases may be generated).

The contingency plan did not state that the emergency coordinator will take all reasonable measures to ensure that fires, spills, explosions, and releases of hazardous waste do not occur, recur or spread to other hazardous wastes at the facility. Specifically, the plan does not mention procedures regarding the collection and containment of any released waste or the removal or isolation of containers in the event of a fire, spill, explosion or release.

The emergency procedures listed in the contingency plan do not require the emergency coordinator to address measures to be followed for the treatment, storage, or disposal of recovered waste, or any other material resulting from a release, fire or explosion. No prohibition or restriction was listed for the treatment, storage or disposal of other wastes within any affected area(s) that may be incompatible with the released material prior to completing the cleanup of the release.

The contingency plan did not describe procedures for the decontamination and/or replacement of emergency equipment used during an emergency prior to resuming operations at the facility.

The contingency plan did not list primary or secondary evacuation routes used in the event of an emergency.

We found no records that documented arrangements with local police or fire departments. We found no records that documented the transmittal of the contingency plan to any other local authorities.

Closing Conference

A closing conference was conducted by EPA with representatives from Omnium's Health and Safety Office, General Counsel and office of Research Affairs. University attendees included the Associate Dean for University of Omnium's Office of Research Affairs, the Director and Manager or EHS, and the General Counsel. We outlined a list of concerns at this meeting that included manifest issues, satellite accumulation marking and labeling issues, unknown wastes issue, etc. We stated that we would evaluate records and information collected during the inspection and may follow up with additional questions based on our review. The University representatives stated that they were committed to complying with the regulations. We concluded the inspection at approximately 5:07 p.m.