



Indiana State University

Department of Physics

April 8, 1993

United States Nuclear Regulatory Commission
Region III
799 Roosevelt Rd
Glen Ellyn, IL 60137

Reply to a Notice of Violation

Dear Sir or Madam:

This letter serves as vehicle of response to violations noted on a routine safety inspection conducted by Michelle S. Barry, M.S., and James R Mullauer, M.H.S. of your office on February 22 and 23, 1993. The violations were identified for License No. 13-09639-05 (Docket No. 030-00706). In this rejoinder, the licensee (Indiana State University) will address responses to two Severity Level IV violations and two concerns as noted in your letter of March 16, 1993.

Violation #1

License Condition No. 19 requires that licensed material be possessed and used in accordance with the statements, representations, and procedures contained in certain referenced applications and letters. The referenced letter dated April 29, 1988, states in Item 1.b. that an audit of records and a review of the activities of the Radiation Safety Officer will be performed annually by the Radiological Control Committee. Contrary to the above, in 1992, an audit of the records and a review of the activities of the Radiation Safety Officer were not performed by the Radiological Control Committee. (This is a repeat Severity Level IV violation (Supplement VI).

Response:

The licensee does recognize that an audit was not performed in 1992 and offers the following reasons and follow-up actions.

REASON FOR THE VIOLATION

During the Fall of 1992 the administration requested that Dr. John Swez assume duties as Acting Radiation Safety Officer in place of Dr. Mark Oster. On November 20, 1992 Indiana State University requested that change in a letter to you. Dr. Swez requested from Dr. Oster that copies of records be transmitted to him. However a final audit was not performed by Dr. Oster for 1992.

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IMMEDIATE CORRECTIVE RESPONSE

Dr. Swez immediately recognized the need for control of radioisotopes in the University and began the following immediate corrective action.

1. A database was established in September of 1992 which would identify all incoming radioactive isotope shipments henceforth.
2. A history of previous radioisotope shipments was sought from individual departments and a second database file was established for orders previous to September of 1992.
3. A mainframe computer program was implemented for the University which would track any radioisotope shipment ordered by the Purchasing Department. The practice of still requiring the signature of the Radiation Safety Officer on requisitions is retained but the mainframe computer scan provides a backup check.
4. Dr. Swez visited all principal investigators within the University and inventoried all radioisotopes on hand.
5. Records were retained of outgoing radioactive disposal to *Adco Company* in September of 1992.
6. An audit of the records mentioned was promised and delivered to the Committee by February 26th, 1993 but this event occurred after the NRC inspection of February 23. However, the intent of the delivery of record keeping was noted in the minutes of the Radiological Control Committee of February 17th. The audit did not totally comply with license condition No. 19th, but it did prove control of radioisotopes on the I.S.U. campus.

CORRECTIVE RESPONSE TO AVOID FUTURE VIOLATIONS

The licensee has already responded in the form of a partial audit to the Radiological Control Committee. The Radiation Safety Officer will continue items #1 and # 3 of the corrective responses action above and will report on all aspects of License Condition #19 in the future.

IMPLEMENTATION DATE

In particular, an audit will again be done at the end of the current fiscal year but will be reported to the Radiological Control Committee's Chairperson within 30 days after the end of the current fiscal year, which closes on June 30, 1993.

Violation #2

License Condition No. 19 requires that licensed material be possessed and used in accordance with the statements, representations, and procedures contained in certain referenced applications and letters. The Radioisotope Handling Procedures contained in the referenced application dated November, 1988 states in the section entitled "REGULATION PERTAINING TO RADIOISOTOPE LABORATORIES" that smoking, eating, or drinking is

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prohibited in the radioisotope laboratories. Drinking or eating utensils, such as coffee cups, are not to be located at any time in these laboratories. Contrary to the above, on February 23, 1993, a bottle of champagne was located inside a refrigerator containing radioactive material in laboratory room number 280 of the Science Building. (This is a repeat Severity Level IV violation (Supplement VI).

Response:

The licensee does recognize that a Severity Level IV violation did occur.

REASON FOR THE VIOLATION

The principal investigator involved simply broke regulations by storing an unopened bottle of champagne within a refrigerator where radioisotopes were being stored.

IMMEDIATE CORRECTIVE ACTION

The bottle of champagne was carefully swipe tested for any residual radioactivity. There was none. The bottle was given back to the principal investigator with the stipulation that he must store it in compliance with regulations.

CORRECTIVE ACTION TO AVOID FUTURE VIOLATIONS

A written directive was sent to all principal investigators reporting the general nature of this incident and that it has imposed a level IV Severity Violation on the licensee. A statement was made that such violations will not be allowed in the future by the Radiation Safety Officer. A statement was also made that routine unannounced inspections would be made henceforth which would specifically be directed to violations of this nature, and a principal investigator's permit to utilize radioisotopes will be revoked if continued violations of this nature were discovered.

IMPLEMENTATION DATE

Immediately.

Concern #1. Need for training programs.

Response. Indiana State University has proposed a non-credit evening radioisotopes training course to begin in the fall of 1993 and is requiring all individuals who work for principal investigators (and who cannot demonstrate previous training) to enroll in this five week, 10 hour, evening class. A brief synopsis of the course is attached.

Concern #2. Appointment of the new Radiation Safety Officer.

Response. In a letter dated March 15, 1993 from Ms. Cassandra F. Frazier of the Nuclear Materials Licensing Section, John A. Swez was authorized as the Radiation Safety Officer.

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Indiana State University does recognize that all future changes of that position would necessitate approval of the N.R.C. and that a newly appointed R.S.O. must work together with the incumbent.

Thank you for the consideration of allowing the licensee to provide reasons and corrective actions.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "John Swez", written in dark ink.

John Swez, Radiation Safety Officer

Enc: Proposal for a non-credit training course.

Proposal for A Non-Credit Evening Class
Fall 1993

Safe Practices in the Radioisotopes Laboratory

Course Synopsis

This course is designed to teach individuals proper procedures in a radioisotopes laboratory. It is required of all individuals who have had little or no radioisotopes experience and wish to work with radioisotopes at Indiana State University. It may be taken by anyone who wishes to gain fundamental training in radiation, proper procedures used in radioisotopes handling, radiation monitoring instruments, and radiation emergency procedures. The course will consist of classroom lecture including video tapes, laboratory and equipment demonstration, and radioactive laboratory hands-on simulation.

Course Outline

- I. Fundamentals of Radiation
 - A. History and Discovery of Radioactivity
 - B. Description of Ionizing Radiation
 - C. Types of Radiation and Energies Involved
 1. Alpha Rays
 2. Beta Rays
 3. Gamma Rays
 4. Neutron Radiation
 5. X-Rays
 - D. Units of Radiation and Radioactivity Measurement
 - E. Concept of Radiation Dose and Radiation Exposure
 1. Involved Units
 2. Qualifying Factors
 3. A Comparison of Conventional and SI Units
 - F. Most Commonly Used Radioisotopes in the Laboratory
- II. The Safe Handling of Radioactive Compounds in Biological and Chemical Research
 - A. The Concept of ALARA or "As Low As Reasonably Achieved" exposures
 - B. Safety of the radioisotopes worker and other individuals in the radioisotopes laboratory.
 1. Use of Bioassay Procedures
 2. Personnel monitoring
 3. Area Monitoring
 - C. The Regulation of a Radioisotopes Worker's Safety by the Code of Federal Regulations.

Course Synopsis

Safe Practices in the Radioisotopes Laboratory

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- D. The Proper Use of Radioactive Warning Signs
 - E. Setting Up a Work Station for an experiment using radioactive reagents
 - 1. Class Demonstration and Hands-On Simulation
 - 2. Cleaning Up a Work Station following an Experiment
 - F. What to do with Radioactive Waste.
 - G. Hazards involved in handling certain radioisotopes
 - 1. external hazards
 - 2. internal hazards
 - 3. vulnerability of the fetus to radiation
 - H. The Transportation of Radioisotopes to the User's Laboratory
 - 1. Demonstration of Swipe Testing a Package for contamination
 - 2. Standard Procedures in the inventory of a shipment
 - I. Proper use of a Radioisotopes Hood
- III. Proper Use of Radiation Monitoring Equipment
- A. The Geiger-Mueller Counter
 - 1. Different probes
 - 2. Variations of the GM Counter
 - B. The Gamma Counter and the Liquid-Scintillation Counter
 - C. Proper Use of Radiation Monitoring Equipment for Monitoring Radioactivity
- IV. Record Keeping in the Radioisotopes Laboratory
- A. Inventory and Use of Radioisotopes in day-to-day activities.
 - B. Swipe Testing Procedures
 - C. Elementary Calculations Involving Radioisotopes Usage
- V. Emergency Procedures
- A. Procedures used in the event of a radioactive spill
 - B. Procedures used in the event of a release of airborne radionuclides
 - C. Procedures used in the event of personnel contamination

Course Synopsis
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This course will limited to 25 participants and will be taught during a time period of five weeks. Each week will consist of one lecture or laboratory demonstrations of two hours duration. If there is sufficient demand, the course will be repeated once during the Fall 1993 semester. Alternatively, two course sections can be taught concurrently.

Suggested Meeting Times: Tuesday and/or Wednesday Evenings. 6:00 PM to 7:50 PM.
Meeting Place: S-120.

Instructors: John Swez, Dale Manwaring, and other Members of the Radiological Control Committee at Indiana State University