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Yale University *New Haven, Connecticut 06520*

OFFICE OF THE PROVOST

December 20, 1989

Docket Nos. 030-00582
 030-06886
 070-00053
 License Nos. 06-00183-03
 06-00183-04
 SNM-52
 EA 89-131
 Re: 10 C.F.R. 2.201
 10 C.F.R. 2.205

Director, Office of Enforcement
 United States Nuclear Regulator, Commission
 Washington, D.C. 20555

Attention: Document Control Desk

Re: Yale University Reply to Notice of Violation and
 Proposed Imposition of Civil Penalties: EA 89-131

Gentlemen:

On September 26, 1989, the Commission ("NRC") transmission to Yale University a Notice of Violation and Proposed Imposition of Civil Penalties ("NOV") relating to NRC Inspection Report No. 89-001. The University is committed to taking all steps necessary to comply with applicable NRC requirements. Although, with the exception of alleged renewal authorization review and survey deficiencies, the violations relate to only five of the several hundred laboratories at Yale, our commitment in this regard is institution-wide and we view the NOV with utmost seriousness.

The NOV contains three sections, each describing a group of alleged violations. Section I alleges violations involving thereported 178 rem exposure to the tip of one finger of a researcher at Yale facility. Section II alleges violations involving (1) approval of incomplete applications to use radioactive materials; (2) failure to perform audits/surveys of various laboratories at the required frequency; and (3) inadequate training of certain individuals performing lic. activities. Section III alleges certain violations involving eating and drinking in laboratories where radioactive material was used. Pursuant to 10 C.F.R. 2.201 and 2.205 and the NOV, Yale's Reply to each alleged violation is attached.

Although as discussed in Yale's attached reply to the NOV, Yale has chosen not to contest the alleged violations, we maintain that the proposed escalated enforcement is inappropriate and not in

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accordance with the General Statement of Policy and Procedure for NRC Enforcement Actions, 10 C.F.R. Part 2, Appendix C (1989) ("Enforcement Policy"). Accordingly, Yale respectfully requests that the proposed civil penalties be mitigated for the reasons stated below and in its Reply.

NRC Inspection No. 89-001 resulted from Yale's identification and prompt reporting to the NRC of the incident of exposure specified in Section I of the NOV. Section V.B.1. of the Enforcement Policy states that "Reduction of up to 50% of the base civil penalty . . . may be given when a licensee identifies the violation and promptly reports the violation to the NRC." Yale submits that proper application of the Enforcement Policy would result in a 50% reduction of the base civil penalty permitted under Section I.

Contrary to what we believe to be the meaning and purpose of the Enforcement Policy guidelines, the NRC has proposed to escalate by 100% the base civil penalties for the violations alleged in Sections I and II. In its September 26, 1989, letter, the NRC states that it increased the fine by 100% because Yale's "prior compliance history has been poor." We believe that this characterization is neither accurate nor fair.

Yale has no history of violations involving reportable exposure of individuals to radiation. The exposure identified in Section I was an isolated incident that Yale immediately reported and promptly corrected. Medical examinations indicated no observable effects from the radiation, and no other personnel or facilities were involved. The violation at issue was of very brief duration. The NOV does not claim otherwise. Corrective action was promptly taken to prevent recurrence, as the Radiation Safety Committee investigated the matter, immediately removed the individual from radiation work for the balance of the year, and required the Principal Investigator to appear before the Committee to explain what led to the exposure. Furthermore, all other Principal Investigators are being informed of the incident and reminded of the requirement to monitor research apparatus to ensure that radioactivity was removed. Thus, under each category set forth in Section V.B. of the Enforcement Policy, Yale's actions in connection with the violation alleged in Section I warrant mitigation of the proposed civil penalty.

That the violation alleged in Section I involved exposure should have no bearing in determining the penalty for the Section II violations. Neither the violations alleged in Section II of the NOV nor, to the best of our knowledge, any past Yale activity resulted in the reportable exposure of anyone to radioactive material. Escalation of the base penalty by 100 percent is not warranted

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because none of the violations alleged in Section II were repeat violations. Moreover, there appears to be no warrant for escalating a civil penalty already increased by 100 percent by an additional 50 percent on the asserted ground that "these problems were identified by the NRC and the University should have identified and corrected them sooner as a result of its own efforts to ensure compliance with NRC requirements." As discussed more fully in Yale's Reply to the NOV, Yale has prior to the NRC inspection identified and initiated steps to improve its performance in these areas.

The renewal authorization applications cited in Section II.A.1. of the NOV were submitted in a somewhat abbreviated format because all other relevant information was contained in the previously reviewed original authorizations. Yale's procedure ensured that all relevant information was provided at least once and posed no threat to the health or safety of any Yale personnel or the public. Nevertheless, Yale had recognized the desirability of greater information requirements for renewal authorizations prior to the NRC inspection. As set out in more detail in Yale's Reply to the NOV, the Radiation Safety Committee had already taken steps to change the form for renewal authorizations to require more information when the violations alleged by the NRC occurred.

As indicated in Section II.A.3. of the NOV, Yale was unable to complete in 1988 all of the quarterly surveys at each of its laboratories. This was not a situation that Yale had "failed to identify and correct." Yale established an ambitious monitoring program for itself under its license precisely because of its concern for safety and proper management of its program. That it fell short of its high standard does not indicate mismanagement, but rather that Yale needed more resources to meet its goals. Contrary to the NRC's assertion, Yale had conducted an 18 month review prior to the NRC inspection and had determined to reorganize its safety program to devote additional resources to meet these goals. An additional technician position has now been added to the Radiation Safety Department staff to address deficiencies.

The violations alleged in Sections II.A.4, II.A.5. and II.B involved discrete and isolated incidents in which a few individuals out of several thousand users of radioactive material acted contrary to Yale policy and procedures. No exposure to radiation resulted. Immediately upon learning of the incidents, Yale took prompt and effective corrective action by investigating and in one case suspending privileges.

Finally, with respect to the violation alleged in Section II.A.2, Yale submits that the recommendation contained in the January 26, 1989 memorandum was erroneously characterized as a requirement, when in fact discretion on the part of Principal

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Investigators was intended. This recommendation was later clarified to be discretionary, since thyroid counts are required only when conditions indicate that a count is appropriate. Counts one or two days after iodination are not always required as a matter of course.

In recognition of the circumstances surrounding the violations alleged in Section II, Yale submits that mitigation rather than escalation is warranted under the NRC's Enforcement Policy. With respect to authorization renewal information and laboratory surveys, steps were already being taken to achieve compliance when the NRC inspection occurred, and further steps have been taken to prevent recurrence. Improper disposals and training deficiencies were aberrational incidents contrary to Yale policy and procedures which were promptly dealt with.

As set out in the Reply, additional measures were taken to enhance procedural awareness and regard for safety through further dissemination of information and adoption of stringent sanctions for noncompliance. Reorganization of Yale's safety program, authorization of additional safety personnel and other measures further warrant reduction of the penalties proposed under the NRC standards recognizing comprehensiveness of corrective action.

Yale does not seek mitigation of the civil penalty proposed under Section III, but wishes to call attention to the sections of its Reply which relates the reasons for the violation and the prompt actions Yale took to correct the situation.

Yale is committed to continuing and improving its substantial efforts to comply with applicable NRC requirements. Thank you for your consideration.

Very truly yours,


YALE UNIVERSITY




Frank M. Turner
Provost

cc: NRC Region I Administrator

I, Frank M. Turner, being duly sworn, subscribe to and say that I am Provost of Yale University; that I have full authority to sign and file with the Nuclear Regulatory Commission the attached Reply to NRC Notice of Violation and Proposed Imposition of Civil Penalties--EA 89-131 and am familiar with the contents thereof; and that the matters set forth therein are true and correct to the best of my knowledge and belief.


Frank M. Turner

Subscribed and sworn to before me, a Notary Public/Commissioner of the Superior Court in and for the State of Connecticut this 19th day of December, 1989.


Notary Public/Commissioner of
the Superior Court

Docket Nos. 030-00582
030-06886
070-00053

EA 89-131
Re: 10 C.F.R. 2.201
10 C.F.R. 2.205

Attachment 1

Yale University
Reply to Notice of Violation
and
Proposed Imposition of Civil Penalties

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Yale University Reply to Notice of Violation

Statement of Violation I.A.

10 C.F.R. 20.101(a) limits the radiation dose to the extremities of an individual in a restricted area to 18.75 rems per calendar quarter.

Contrary to the above, during the first calendar quarter of 1989, an individual working in Room 302 of Farnam Memorial Building, a restricted area, received an extremity radiation dose of 178 rem to the tip of the middle finger of the left hand while handling microcurie quantities of iodine-125.

Yale Reply.

i. Admission or denial.

It is agreed that the exposure occurred.

ii. Reasons for violation.

After observing that there was no more radioactive material being detected in eluate from a column, an investigator mistakenly assumed the column was free of radioactivity when it still contained microcurie quantities. He subsequently handled the apparatus and resulting samples as non-radioactive, without wearing gloves. As a result, he exposed the tip of the middle finger on the left hand to a localized extremity radiation dose of 178 rem.

iii. Corrective steps that have been taken.

Upon learning of the violation, Yale immediately removed the individual from radiation work for the balance of the year. In addition, the Radiation Safety Committee required the Principal Investigator to appear before the Committee to explain the events that led to the exposure. All Principal Investigators are being informed of the incident and reminded of the necessity of monitoring research apparatus to ensure that radioactivity is properly handled.

iv. Corrective steps that will be taken.

Renewal authorization reviews will be augmented to detect and correct any apparent losses in procedures that might possibly lead to a violation. Effective November 1, 1989, an additional Health Physicist has been authorized to assist with the authorization review.

v. Date of full compliance.

The affected laboratory was in full compliance as of May 17, 1989.

vi. Request for mitigation.

This exposure was an isolated incident that Yale identified and promptly reported to the NRC. Medical examinations indicated that the exposed individual suffered no observable effects from the radiation, and no other personnel or facilities were contaminated. Corrective steps were promptly taken and Yale identified and promptly reported the violation, and its prior performance in this area has been good. Yale has no record of any past reportable exposures to radiation. Finally, the violation was of a short duration. Accordingly, proper application of the Enforcement Policy should result in a 50 percent reduction of the base civil penalty rather than the 100 percent escalation proposed under Violation I.A. of the NOV to reflect Yale's performance under the factors specified in Section V.B. of the Enforcement Policy.

Statement of Violation I.B.

10 C.F.R. 20.301 requires that no licensee dispose of licensed material except by certain specified procedures.

Contrary to the above, between February 23 and April 19, 1989, a research investigator disposed of approximately 0.1 microcuries of iodine-125 in the normal trash, a method not authorized by 10 C.F.R. 20.301. Specifically, the investigator disposed of materials which he eluted from a protein separation column that contained residual iodine-125.

Yale Reply.

i. Admission or denial.

It is agreed that the inappropriate disposal occurred in the laboratory in question after the mistaken decision had been made that the column no longer contained radioactivity.

ii. Reasons for the violation.

The unsuspected disposal of some laboratory items containing sub microcurie quantities of activity followed logically from the individual's initially mistaken assumption (described in Yale's reply to Violation I.A.) that the column no longer contained radioactivity.

iii. Corrective steps that have been taken.

Upon learning of the violation, Yale immediately removed the individual from radiation work for the balance of the year. In addition, the Radiation Safety Committee required the Principal Investigator to appear before the Committee to explain the events that led to the exposure. All Principal Investigators are being informed of the incident and reminded of the necessity of monitoring research apparatus to ensure that radioactivity is properly handled.

iv. Corrective steps that will be taken.

Renewal authorization reviews will be augmented to detect and correct any apparent lapses in procedures that might possibly lead to a violation. Effective November 1, 1989, an additional Health Physicist has been authorized to assist with the authorization review. In addition, all Principal Investigators have been advised by memorandum that suspension of all ordering privileges will occur after a single incidence of radioactive material in the regular trash. Repeat violations may lead to further sanctions.

v. Date of full compliance.

The affected laboratory was in full compliance as of May 17, 1989.

vi. Request for mitigation.

This violation followed from the exposure described in Violation I.A. Because Violation I.A should be mitigated (as described above), Violation I.B., which was precipitated by Violation I.A., should similarly be mitigated. In addition, Violation I.B. did not result in any additional exposure to radioactive material and Yale took prompt action to correct the violation. Furthermore, stringent sanctions were adopted to prevent recurrence. Accordingly, proper application of the Enforcement Policy should result in mitigation of the base civil penalty rather than the 100 percent escalation proposed under Violation I.B. of the NOV.

Statement of Violation I.C.

10 C.F.R. 20.201(b) requires the licensee to make such surveys as (1) may be necessary to comply with all sections of 10 C.F.R. Part 20, and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present. As defined in 10 C.F.R. 20.201(a), "survey" means an evaluation of the radiation hazards incident to the use or presence of radioactive materials under a specific set of conditions.

Contrary to the above, between February 23 and April 3, 1989, a researcher failed on at least six occasions to perform a survey or evaluation to determine whether residual iodine-125 remained in a protein separation column before discontinuing radiation safety precautions for the use and handling of that column, and this failure was a principal factor contributing to violations of 10 C.F.R. 20.101 and 20.301.

Yale Reply.

i. Admission or denial.

It is agreed that surveys in the laboratory in question were not conducted by laboratory personnel during the experiment.

ii. Reasons for the violation.

The incorrect assumption that the columns no longer contained radioactivity contributed to the lack of surveys conducted by laboratory personnel. This violation represents an incident of mistaken judgment but does not reflect upon the overall adequacy of the survey procedures.

iii. Corrective steps that have been taken.

Upon learning of the violation, Yale immediately removed the individual from radiation work for the balance of the year. In addition, the Radiation Safety Committee required the Principal Investigator to appear before the Committee to explain the events that led to the exposure. All Principal Investigators are being informed of the incident and reminded of the necessity of monitoring research apparatus to ensure that radioactivity is properly handled.

iv. Corrective steps that will be taken.

Renewal authorization reviews will be augmented to detect and correct any apparent lapses in procedures that might possibly lead to a violation. Effective November 1, 1989, an additional Health Physicist has been authorized to assist with the authorization review.

v. Date of full compliance.

The affected laboratory was in full compliance as of May 17, 1989.

vi. Request for mitigation.

This violation followed from the exposure described in Violation I.A. Because Violation I.A. should be mitigated (as described above), Violation I.C., which was precipitated by Violation I.A., should similarly be mitigated. In addition, Violation I.C. did not result in any additional exposure to radioactive material, and Yale took prompt action to correct the violation and prevent recurrence. Accordingly, proper application of the Enforcement Policy should result in mitigation of the base civil penalty rather than the 100 percent escalation proposed under Violation I.C. of the NOV.

Statement of Violation I.D.

Until the license was renewed on May 23, 1989, Condition 21 of License No. 06-00183-03 required, in part, that licensed material be possessed and used in accordance with the statements, representations, and procedures contained in an application dated May 15, 1979, including a manual of Radiation Safety Procedures dated July 1977.

Item 4.a. on page 5 of the manual of Radiation Safety Procedures included with the May 15, 1979 application requires that each individual who has contact with radioactive materials utilize all appropriate protective measures, such as wearing gloves when necessary. Item 5 of an application approved by the Radiation Safety Sub-Committee for a specific Principal Investigator in January 1989 requires that gloves be worn for handling iodine-125.

Contrary to the above, Between March 6 and April 15, 1989, an individual using radioactive material under the application approved in January 1989 by the Radiation Safety Sub-Committee for that specific Principal Investigator did not wear gloves when he used microcurie amounts of iodine-125, which contributed to the exposure identified above.

Yale Reply.

i. Admission or denial.

It is agreed that gloves were not worn by the individual involved when the incident described in Violation I.A. occurred, following the mistaken decision that the column no longer contained radioactivity.

ii. Reasons for the violation.

The individual's decision not to wear gloves followed logically from his initially mistaken assumption (described in Yale's reply to Violation I.A.) that the column no longer contained any radioactivity.

iii. Corrective steps that have been taken.

Upon learning of the violation, Yale immediately removed the individual from radiation work for the balance of the year. In addition, the Radiation Safety Committee required the Principal

Investigator to appear before the Committee to explain the events that led to the exposure. All Principal Investigators are being informed of the incident and reminded of the necessity of monitoring radioactivity during research.

iv. Corrective steps that will be taken.

Renewal authorization reviews will be augmented to detect and correct any apparent lapses in procedures that might possibly lead to a violation. Effective November 1, 1989, an additional Health Physicist has been authorized to assist with the authorization review.

v. Date of full compliance.

The affected laboratory was in full compliance as of May 17, 1989.

vi. Request for mitigation.

This violation followed from the exposure described in Violation I.A. Because Violation I.A. should be mitigated (as described above), Violation I.D., which was precipitated by Violation I.A., should similarly be mitigated. In addition, Yale took prompt action to correct the violation and prevent recurrence. Accordingly, proper application of the Enforcement Policy should result in a mitigation of the base civil penalty rather than the 100 percent escalation proposed under Violation I.D. of the NOV.

Statement of Violation II.A.1.

Condition 21 of License No. 06-00183-03 requires that licensed material be possessed and used in accordance with the statements, representations and procedures contained in various applications and letters. Until the license was renewed on May 23, 1989, this condition included an application dated May 15, 1979, including a manual of Radiation Safety Procedures dated July 1977, and a letter dated May 20, 1982. Following renewal, this condition includes an application dated August 10, 1987, and a letter dated December 21, 1987.

1. Item 9 of the letter dated May 20, 1982, requires that applications for authorization to use radioactive material include an outline of the experimental procedure.

Contrary to the above, as of May 23, 1989, approximately 60 authorizations (approved by the Radiation Safety Sub-Committee) did not include an outline of the experimental procedure. Specifically, most applications used only one or two lines to describe the program, and did not include details of techniques which would be used in the experiments. For example, an application was approved in January, 1989, which allowed the use of iodine-125 to perform iodinations, and that application did not include an outline of the experimental procedure.

Yale Reply.

i. Admission or denial.

It is agreed that the authorization applications in question did not provide a detailed outline of the experimental procedure, which had previously been provided in connection with the original authorization.

ii. Reasons for the violation.

Renewal applications required an abbreviated outline of the experimental procedure because they are, in essence, extensions of the previously approved applications. Therefore, all relevant information for renewal applications had been properly provided as part of the previously approved protocols.

iii. Corrective steps that have been taken.

Yale recognized the desirability of requiring an outline of the experimental procedure in renewal applications prior to the NRC inspection, and had taken steps commencing December 15, 1988 to develop a new renewal form requiring such information (see Exhibit A hereto). The form was revised pursuant to Radiation Safety Committee action taken on March 29, 1989, and has been in use for some months.

iv. Corrective steps that will be taken.

Renewal authorization reviews will be augmented to detect and correct any apparent lapses in procedures that might possibly lead to a violation. Specifically, effective November 1, 1989, an additional Health Physicist has been authorized to assist with the authorization review.

v. Date of compliance.

Yale has been in compliance since usage of the new forms was adopted subsequent to the March 29, 1989 Radiation Safety Committee meeting.

vi. Request for mitigation.

In accordance with the NRC's Enforcement Policy, 50 percent mitigation of the base penalty rather than 100 percent escalation is warranted in light of Yale's self-corrective action in advance of the NRC inspection and prompt augmented action to devote additional personnel to compliance.

Statement of Violation II.A.2.

Item 14 of the licensee's application dated May 15, 1979, provides that the Radiation Safety Committee has authority to grant permission for the use of isotopes, and that procedures for the use of radioactive materials are outlined in committee recommendations issued to approved investigators.

Item 3 in the recommendations issued to an approved investigator on January 26, 1989, provided that persons performing iodinations must have their thyroids monitored within one or two days following iodination.

Contrary to the above, on March 7, March 14, and March 31, 1989, an individual performed iodinations using one millicurie of iodine-125 under the Authorization issued in January 1989 to that specific Principal Investigator, and the individual did not have his thyroid monitored until April 19, 1989.

Yale Reply.

i. Admission or denial.

Yale admits that an individual performed iodinations on the dates indicated without undergoing thyroid monitoring until April 19, 1989.

ii. Reasons.

The University's license requires that thyroid counts be performed when air concentrations indicate thyroid counts are appropriate or when a spill or other situation indicate a thyroid count is appropriate. A thyroid count is not always required 1 to 2 days following iodination. The statement in the January 26, 1989 covering letter from the Director, Radiation Safety Department to the Investigator erroneously characterized a recommendation as a requirement, where in fact discretion on the part of the Principal Investigators was intended by the Radiation Safety Committee. This statement is no longer included in such letters. Thus, the thyroid monitoring specified in Violation II.A.2. was conducted in accordance with the intended committee recommendations.

iii. Corrective Steps that have been taken.

The statement is no longer included in approval letters.

iv. Date of compliance.

November 13, 1989.

v. Request for mitigation.

The individual actually followed the policy intended by the Radiation Safety Committee. The violation alleged refers to a recommendation never intended to be a requirement by the Committee.

Statement of Violation II.A.3.

Item 9 of the May 20, 1982 letter requires that radiation technicians perform surveys in all laboratories using radioisotopes on a quarterly basis.

Contrary to the above, during the last three quarters of 1988, laboratories where radioactive materials were used were not surveyed by the radiation technicians on a quarterly basis. Specifically:

- a. between April 1 and June 30, 1988 (the second quarter), only 484 of the approximately 530 laboratories were surveyed;

- b. between July 1 and September 30, 1988 (the third quarter), only 311 of the approximately 530 laboratories were surveyed; and
- c. between October 1 and December 30, 1988 (the fourth quarter), only 452 of the approximately 530 laboratories were surveyed.

Yale Reply.

i. Admission or denial.

It is agreed that the quarterly frequency of laboratory radiation surveys was not met.

ii. Reasons for the violation.

Yale voluntarily established a rigorous schedule of surveys of all of its radiation use laboratories. Although a good faith effort was consistently made to adhere to this schedule, Yale lacked the technical staff to complete the reviews at the designated frequency.

iii. Corrective steps that have been taken.

As part of Yale's radiation safety reorganization developed over an 18 month review period, Yale had recognized prior to the NRC inspection the need to acquire additional technical personnel to conduct the quarterly surveys. To prevent further recurrence of deficiencies in surveys, an additional technician position was added November 6, 1989 to the Radiation Safety Department staff. The technician will augment the present staff and will allow for meeting the required frequency of laboratory surveys.

iv. Corrective steps that will be taken.

The Radiation Safety Committee will review the frequency of surveys quarterly to ensure that the added resources are sufficient to meet this requirement.

v. Date of full compliance.

April 1, 1990.

vi. Request for mitigation.

Yale had in place a reorganization effort designed to address this deficiency when the NRC inspection occurred. Corrective steps initiated by Yale were addressing this issue when the citation occurred. Under the Enforcement Policy, mitigation rather than escalation is warranted.

Statement of Violation II.A.4.

The item entitled, "Radioactive Waste Disposal," on page 9 of the manual of Radiation Safety Procedures included with the May 15, 1979 application requires that records be maintained of all disposals of radioactive material. Item 11, "Radioactive Waste Management and Procedures" of the application dated August 10, 1987, requires that appropriate records be maintained for all waste streams. 10 C.F.R. 30.51 requires the licensee to keep records showing the disposal of byproduct material.

Contrary to the above, as of May 30, 1989, records were not maintained of monthly disposals of animal carcasses, which had been administered millicurie quantities of phosphorus-32, and which were held for decay and then disposed of as non-radioactive waste by laboratory personnel.

Yale Reply.

i. Admission or denial.

It is agreed that certain laboratory personnel in the University were not following University-approved waste disposal procedures.

ii. Reasons for the violation.

Personnel in one University laboratory established their own "hold for decay" procedure that had not been reviewed or approved by the Radiation Safety Department.

iii. Corrective steps that have been taken.

Upon learning of the violation, Yale immediately suspended the Principal Investigator's privilege to order radioactive material pending review of waste disposal procedures in the laboratory. On July 28, 1989 a University Health Physicist

reviewed the laboratory waste disposal procedures with the Principal Investigator. The Principal Investigator has discontinued the laboratory "hold for decay" procedure and is disposing of his waste through the Radiation Safety Department's waste disposal program.

iv. Corrective steps that will be taken.

The new authorization forms adopted by Yale as a result of its prior program for addressing informational deficiencies (see II.A.1. above) require a more detailed description of waste disposal procedures. Reviews of authorizations are being augmented to detect and correct any lapses in procedures and thereby prevent a disposal misunderstanding from recurring. An additional Health Physicist has been authorized, effective November 1, 1989, to assist with the authorization review.

v. Date of full compliance.

On September 29, 1989 the Principal Investigator was in compliance.

vi. Request for mitigation.

This incident represents a single aberration from observance of Yale policy and procedures. It was confined to one of hundreds of Yale laboratories and did not result in any exposure to radioactive materials. The actions of the individuals at this laboratory were not condoned by or known to the Radiation Safety Committee. Upon learning of the violation Yale immediately took effective corrective action with the individual involved. Additionally, steps designed to prevent this type of incident from occurring generally were already being developed by Yale when the violation occurred. Accordingly, proper application of the Enforcement Policy should result in mitigation of the civil penalty rather than the 100 percent escalation proposed under Violation II.A.4. of the NOV.

Statement of Violation Item II.A.5.

Item 2 under "Authorized Principal Investigator Responsibility" on page 3 of the manual of Radiation Safety Procedures included with the May 15, 1979 application and Item 8 of the application dated

August 10, 1987, require that the Principal Investigator train individuals in specific laboratory safety procedures prior to these individuals beginning their work with radioactive materials.

Contrary to the above, from March 23 to June 2, 1989, an individual used 200 microcuries of hydrogen-3 per week, and the Principal Investigator had not instructed the individual in certain laboratory safety procedures prior to the individual beginning work with radioactive materials. Specifically, the individual was not instructed on the appropriate techniques for performing radioactive contamination surveys or in the University's prohibition of consuming beverages in areas where radioactive materials are used.

Yale Reply.

i. Admission or denial.

It is agreed that the individual in question had not attended a seminar presented by the Radiation Safety Department and had not been fully trained by the Principal Investigator at the time of the inspection.

ii. Reasons for the violation.

It is the responsibility of the Principal Investigator to train new employees before they begin work with radioactive material, and to ensure that the new employee attends a radiation safety training session presented by the Radiation Safety Department monthly. This case represents an isolated instance where the Principal Investigator did not adequately inform the new employee and did not ensure that the employee attended the first available seminar.

iii. Corrective steps that have been taken.

The individual involved has attended a complete radiation training seminar.

iv. Corrective steps that will be taken.

Principal Investigators are being reminded of their obligation to train all new employees before they begin work with radioactive materials. The Radiation Safety Committee has adopted sanctions for violations.

v. Date of full compliance.

The individual attended a seminar on September 18, 1989.

vi. Request for mitigation.

This incident represents an isolated lapse involving a single individual of the more than 1,600 University students, faculty and staff authorized to use radioactive materials and did not result in any exposure to radioactive materials. Upon learning of the violation, Yale immediately took effective corrective action and adopted more stringent sanctions for violations. Accordingly, proper application of the Enforcement Policy should result in mitigation of the civil penalty rather than the escalation proposed under Violation II.A.5. of the NOV.

Statement of Violation II.B.

Condition 19 of License No. 06-00183-06 requires that radioactive material with a physical half-life of less than 65 days be held for a minimum of 10 half-lives prior to disposal as non-radioactive waste.

Contrary to the above, as of May 30, 1989, animal carcasses, which had been administered millicurie amounts of phosphorus-32 (which has a physical half-life of 14 days), were not held for the minimum half-lives prior to disposal as non-radioactive waste; rather, they were routinely disposed after being stored for only seven half-lives.

Yale Reply.

i. Admission or denial.

As in Violation II.A.4. it is agreed that the radioactive waste disposal procedures of the University were not followed in this instance.

ii. Reasons for the violation.

On his own initiative and without the knowledge or approval of the Radiation Safety Committee, an individual set up his own radioactive waste disposal procedures for his individual laboratory which did not meet all of the requirements of the University program. He was storing animal carcasses for decay for seven half-lives rather than ten half-lives as specified in the University license.

iii. Corrective steps that have been taken.

Upon learning of the violation, Yale immediately suspended the Principal Investigator's privilege to order radioactive material pending review of waste disposal procedures in the laboratory. On July 28, 1989 a University Health Physicist reviewed the laboratory waste disposal procedures with the Principal Investigator. The Principal Investigator has discontinued the laboratory "hold for decay" procedure and is disposing of his waste through the Radiation Safety Department's waste disposal program.

iv. Corrective steps that will be taken.

The new authorization forms adopted by Yale as a result of its prior program for addressing informational deficiencies (see II.A.1. above) require a more detailed description of waste disposal procedures. Reviews of authorizations are being augmented to detect and correct any lapses in procedures and thereby prevent a disposal misunderstanding from recurring. An additional Health Physicist has been authorized, effective November 1, 1989, to assist with the authorization review.

v. Date of full compliance.

The laboratory involved was in full compliance as of September 29, 1989.

vi. Request for mitigation.

This incident arose from the same set of unique circumstances as Violation II.A.4 and similarly represents an aberration from Yale policy and procedures. It was confined to one of the hundreds of Yale laboratories and did not result in any exposure to radioactive materials. The actions of the individuals at this laboratory were not known to or condoned by Yale. Upon learning of the violation Yale immediately took effective corrective action with the individuals involved. Additionally, steps designed to prevent this type of incident generally were already being developed by Yale through authorization form requirements of additional specificity for waste disposal. Accordingly, proper application of the Enforcement Policy should result in a mitigation of the civil penalty proposed under Violation II.B. of the NOV.

Statement of Violation III.

Condition 21 of License No. 06-00183-03 requires, in part, that licensed material be possessed and used in accordance with the statements, representations and procedures contained in a letter dated December 21, 1987. Item 4.c. of the letter dated December 21, 1987 prohibits eating and drinking in areas where radioactive materials are present.

Contrary to the above, on June 1 and 2, 1989, personnel consumed beverages and food in two different laboratories (specifically, Room 409 of Lauder Hall and Room 515 of the J.W. Gibbs building) where millicurie quantities of iodine-125, phosphorus-32 and hydrogen-3 were present. This is a repeat violation.

Yale Reply.

i. Admission or denial.

It is agreed that eating in the laboratory occurred.

ii. Reasons for the violation.

Yale has only a limited amount of space available to its personnel for eating. Given the practical inconvenience of leaving the laboratory for a snack or meal, some Principal Investigators and radiation users have occasionally taken it upon themselves to disregard this requirement.

iii. Corrective steps that have been taken.

Yale immediately suspended the offending Principal Investigators from ordering radioactive material until they could explain the violations to the Radiation Safety Committee and describe procedures that were implemented to prevent a recurrence.

iv. Corrective steps that will be taken.

The Radiation Safety Department will impose a strict sanction on any laboratory where eating, smoking, or drinking is observed. The sanction is the suspension of ordering privileges until an explanation is submitted, with details of changes made to prevent a recurrence, and accepted by the Radiation Safety Committee. Repeat violations will lead to sanctions on the whole department. A warning will be issued the first time if evidence of eating is observed. The second observation of evidence will lead to the full sanction.

v. Date of full compliance.

One complete cycle of laboratory inspections will occur by April 1, 1990.

9614K

Yale University
Radiation Safety Department

RADIATION SAFETY COMMITTEE MEETING
Thursday, December 15, 1988 - 3:30 p.m.
J.W. GIBBS - SEMINAR ROOM NO. 451 *

314 Wright Nuclear Structure
Laboratory, West
260 Whitney Avenue
New Haven, Connecticut 06520
203 432-3140

AGENDA

1. Acceptance of Minutes of September 26, 1988 Meeting
2. Movement of Material from Yale-New Haven Hospital to Yale University Facilities
 - a. Report of Subcommittee
3. Security of Packages Procedure
 - a. Report of Subcommittee
4. Status of Radon Surveillance
5. Status of WNSL Accelerator
6. Potential Problems Associated with Handling ³⁵S
7. Radioactive Waste Management
 - a. Mixed Radioactive and Hazardous Waste for New Environmental Protection Agency Requirements and Filing for Interim Status
8. Other New Business
 - a. Transporting of radioactive material between Yale University and the Veterans Administration Medical Center in West Haven
9. Review of Authorizations
 - a. Renewals - Report of Subcommittee
 - b. New Principal Investigators - Report of Subcommittee
10. Quarterly Review of Surveys

* Please note change from our usual meeting room.

Minutes of the Meeting
Yale University Radiation Safety Committee
Thursday, December 1st, 1988 - 3:30 p.m.
J. W. Gibbs Building - Seminar Room No. 453

Excerpt from page 3 of the above meeting of the Radiation Safety Committee

brought to the committee meeting for formal approval. The final approval should be accompanied by a problem-free radiation survey of the new Principal Investigator's facilities. The motion carried unanimously. This prompted a discussion relating to a revision of the authorization form currently in use. Dr. Zoghbi offered several suggestions and the chairman appointed a subcommittee composed of Fredrick Greenhalgh, George Holeman, and Dr. Zoghbi to review the authorization form and prepare a revision for the committee's consideration.

Yale University
Radiation Safety Department

314 Wright Nuclear Structure
Laboratory, West
260 Whitney Avenue
New Haven, Connecticut 06511
203 432-3040

PLEASE NOTE CHANGE OF MEETING LOCATION

RADIATION SAFETY COMMITTEE MEETING

Wednesday, March 29, 1989 - 3:30 p.m.

SLOANE PHYSICS FACULTY LOUNGE
First Floor - 217 Prospect Street

AGENDA

1. Acceptance of Minutes of December 15, 1988 Meeting
2. Review of Authorizations
 - a. Renewals - Report of Subcommittee
 - b. New Principal Investigators - Report of Subcommittee
 - ✓ c. Report of Authorization Subcommittee on Application Revision
3. Security of Packages Procedure
 - a. Report of Subcommittee
 - b. Traffic, Receiving and Stores delivery problems/suggested solutions
4. Transportation Subcommittee Report
5. Radioactive Waste Management
 - a. License amendment application for interim storage after 1993, or in case of access denial. EPA application for storage of mixed waste.
 - b. Minimizing Waste Generation/Volume Reduction (See attached memo dated February 20, 1989.)
6. Quarterly Review of Surveys

Yale University
Radiation Safety Department

114 Wright Nuclear Science
Laboratory, West
260 Whitney Avenue
New Haven, Connecticut
203 432-3040

Minutes of the Meeting
Yale University Radiation Safety Committee
Wednesday, March 29, 1989 - 3:30 p.m.
Sloane Physics Faculty Lounge
First Floor - 217 Prospect Street

Excerpt from page 2 of the Minutes of the above Radiation Safety Committee meeting.
Sample of proposed revised authorization form (4 pages) is attached.

The next item of business was a discussion of the authorization form for the use of radioisotopes that the committee and subcommittee use to review applications. The subcommittee consisting of Frederick Greenhalgh, George Holeman, and Sami Zoghbi met and developed proposed changes in the form. The suggested changes were distributed and Sami Zoghbi led the discussion. Comments were favorable except for one item, the request for information on assay of shipments and stock solutions. After a lengthy discussion of the feasibility and need for such an assay it was decided not to include it as an item on the form. Prof. Zoghbi, as a member of the subcommittee, may question the Principal Investigator about the need to perform an assay for specific experiments. The committee requested Mr. Holeman to revise the current one page green authorization form to include the additional items proposed by the subcommittee and included in the draft reviewed, and to circulate the draft prior to the next meeting.

YALE UNIVERSITY APPLICATION
FOR THE USE OF RADIOISOTOPES

FOR OFFICE USE ONLY
Approved by: _____

Note:

IT IS ESSENTIAL TO FILL OUT THIS FORM IN ITS ENTIRETY.
Please fill out in duplicate and return BOTH copies to:
RADIATION SAFETY DEPARTMENT, 314 Wright Nuclear
Structure Laboratory, West - 260 Whitney Avenue,
Attention: Claire Mulvaney. Phone 432-3040

Date _____ (Authorisation will expire 36 months from application date).

1. Name of Principal Investigator _____ Faculty _____
Room No. & Bldg. _____ Rank _____
Department _____ All rooms in which
isotope is to
be used _____
Telephone No. _____

2. Isotope desired (PLEASE COMPLETE ONE SET OF FORMS FOR EACH ISOTOPE) _____

A. Estimated quantity to be used during next THREE years _____ Millicurie(s)

B. Maximum quantity to be purchased at any one time _____ Millicurie(s)

C. Maximum quantity to have on hand at any one time _____ Millicurie(s)

D. Form: Liquid () Gas () Powder () - Will powder be dissolved in
shipping vial? () - Please describe alternative procedures in Item 5.

E. Are any of the following items to be used?

Infectious viruses Yes () No () - (If answer to either is Yes, please
outline deactivation in Item 5).

Carcinogenic agents Yes () No ()

Other biohazards Yes () No () - (If Yes, explain in Item 5).

F. Are animals to be used? () No () - Type _____ Will Division of
Animal Care be involved in caring for radioactive animals? Yes () No ()

3. List experience of Principal Investigator, relating to isotopes, in detail:

4. The following list of persons who will use or be exposed to radiation under
this authorisation have been instructed by the Principal Investigator in the
radiation protection problems and appropriate precautions to minimize exposure
associated with the above isotope. Everyone using radioactive isotopes must be
listed and attend a Radiation Safety Seminar presented by the Radiation Safety
Department:

Principal user: _____ Others: _____

5. Outline projected research, with COMPLETE details on proposed procedure for handling isotope. Indicate the microcurie or millicurie amounts which will be used for each experiment.
6. List facilities for handling isotope. (Note: dry smears, using #41 Whatman filter paper and counted in a liquid scintillation counter, should be taken to survey areas and equipment for radioactive contamination resulting from work using C-14 and H-3):
- | | | | |
|------------------------------|-----|--------------------------------------|-----|
| Hood | () | Appropriate warning signs and labels | () |
| Shielding | () | Waterproof backed absorbent material | () |
| Disposable gloves | () | for bench and floor covering | () |
| Geiger counter | () | Film Badges, Body | () |
| Mechanical pipette | () | Film Badges, Wrist | () |
| Stainless steel sink | () | Air Sampling Equipment | () |
| Liquid scintillation counter | () | Glove box | () |
7. In addition to immediately contacting the Radiation Safety Department, what local plans have been made by the Principal Investigator for decontamination in case of accident?

IN CASE OF SPILL
IMMEDIATELY NOTIFY
RADIATION SAFETY DEPARTMENT
314 WNSL, WEST
432-3040

8. WASTE DISPOSAL - Nuclear Regulatory Commission and state regulations require written records of the disposition of all isotopes received. Have you:
- | | YES | NO |
|--|-----|-----|
| A. made arrangements with the Radiation Safety Department to obtain appropriate radioactive waste containers? | () | () |
| B. planned for a record-keeping system to enable you to correctly label waste containers as to isotope, date, and quantity, when full? | () | () |
| C. if using animals, made provision for FROZEN storage of carcasses in your area, prior to pick-up by the Radiation Safety Department (if large animals are to be used, adequate storage must be provided by the Principal Investigator) | () | () |
| D. any possibility of a radioactive gas release? | () | () |
| E. read the Radiation Safety Procedures manual concerning radioactive waste disposal procedures? | () | () |
9. Signature below affirms that the applicant has read and will comply with the regulations set forth by the Yale University Radiation Safety Committee regarding the use of radioactive materials. IN CASE OF PROLONGED ABSENCE OR TERMINATION, PLEASE NOTIFY THE RADIATION SAFETY DEPARTMENT 432-3040.

Signature _____

Additional information required for Item 5. Please provide on separate sheets.

- 5.A. Indicate the PURPOSE of this research project, the microcurie or millicurie amounts which will be used for each experiment, and the chemical forms.
- B. Provide your procedures for the security and custody of radioactive material in keeping with the following requirements:
- .. Clearly designate persons (by title) authorized to sign for and receive the radioactive material packages for the laboratory. These individuals must be trained by the Principal Investigator to receive the packages and maintain custody. A specific statement is required that whoever receives the package for the laboratory will maintain custody and will not leave the package unattended until the material is properly stored and secured.
 - .. Follow the current "Recommended Procedures for Opening Packages Containing Radioactive Material", Appendix VII in the Radiation Safety Procedures Manual.
 - .. Survey and open all radioactive material shipments immediately, and store contents in a secure radioisotope storage area.
 - .. Destroy or deface all "radioactive labels" on or in empty containers. Empty containers must be surveyed for radioactivity prior to disposal in regular trash. Do not discard any closed boxes in regular trash. Remove all lids and dry ice from box and show box to be visibly empty.
- C. Outline methodology of the project emphasizing the method of handling the radioactive material. Consider steps which are potentially hazardous or may generate dose rates or contamination potential.
- D. Outline a precautionary procedure that will prevent the unauthorized use or removal of radioactivity during your possession.
- E. Conduct limited surveys after each experiment and a complete survey at least monthly. Maintain records of all survey results. Explain how your surveys will be conducted.

continued on Page 4

F. If the radionuclide is to be used in living things:

- .. Name the organism to be used;
- .. Average weight or volume of living things;
- .. Total number of experimental units;
- .. Amount of radioactivity per experimental unit;
- .. Route of administration;
- .. Will radioactivity be contained in living things?

exhaled air	Yes _____	No _____	N/A _____	Do not know _____
culture media	Yes _____	No _____	N/A _____	Do not know _____
urine	Yes _____	No _____	N/A _____	Do not know _____
feces	Yes _____	No _____	N/A _____	Do not know _____
carcass	Yes _____	No _____	N/A _____	Do not know _____

Please detail a procedure that will allow you to control and prevent the spread of radioactivity and contamination in any of the above situations where the answer was "Yes".

- G. Describe radioactive waste that will be generated and the storage conditions. Consider minimizing waste and appropriate segregation of waste.

Yale University
Radiation Safety Department

314 Wright Nuclear Structure
Laboratory, West
260 Whitney Avenue
New Haven, Connecticut 06520
203 437-3040

AGENDA

Radiation Safety Committee Meeting
September 27, 1989 - 3:30 p.m.
J.W. Gibbs Faculty Lounge - Room 263

Introduction

- a. Introduction of new chairman, members
- b. Committee mandate
- c. Minutes of June 20, 1989 meeting

Old Business

1. Nuclear Regulatory Commission (NRC) inspection response to violations (see attached letter from NRC and Dr. Adelberg's memo of 7/24/89)
2. Sanctions
Report of sub-committee by Harold Aaslestad
3. Radioactive Waste Minimization
Report by Mitchell Callahan

New Business

4. Policy on fixed contamination - Report by Kenneth Price
 - a. Sloane Physics Laboratory radium
 - b. Dr. Binder/Dr. Boyer's laboratory
5. Review of authorizations - Report of sub-committee by Frederick Greenhalgh
 - a. Personnel
 - b. Backlog - six month extension
 - c. New Principal Investigators
 - d. Renewals
6. Applications to use radioisotopes - revised form (copy attached)
Report of sub-committee by Prof. Sami Zoghbi
7. Recent incidents - Report by Radiation Safety Officer
8. Review of Routine Surveys - Report by Radiation Safety Officer
(see attached report)
9. Radiation Safety Committee meeting frequency

Minutes of the Meeting
Yale University Radiation Safety Committee
Wednesday, September 27, 1989 - 3:30 p.m.
J. W. Gibbs Faculty Lounge - Room 263

Page 3
Minutes of Radiation Safety Committee Meeting
September 27, 1989

The next item concerned the revised "Application to Use Radioactive Materials". Prof. Sami Zoghbi distributed the revised form for members' information. The forms are now in use.

YALE UNIVERSITY APPLICATION FOR THE USE OF RADIOISOTOPES

Note: IT IS ESSENTIAL TO FILL OUT THIS FORM COMPLETELY. Please fill out in duplicate and return BOTH copies to: RADIATION SAFETY DEPT. 314 Wright Nuclear Structure Laboratory, West, 260 Whitney Avenue. Phone 432-3040

FOR OFFICE USE ONLY

Date: _____ (Authorization will expire 36 months from application.)

1. Principal Investigator _____ Faculty Rank _____

Room No. & Bldg. _____ All rooms in which isotope is
Department _____ to be used _____
Telephone No. _____

2. Isotope required (COMPLETE ONE SET OF FORMS FOR EACH ISOTOPE) _____

A. Estimated quantity to be used during next THREE years _____ millicuries

B. Maximum quantity to be purchased at any one time _____ millicuries

C. Maximum quantity to have on hand at any one time _____ millicuries

D. Form: (Liquid () Gas () Powder () If in powder form, will powder be dissolved in shipping vial? () - If not, please describe alternative procedures in Item 5.

E. Are any of the following items to be used?

Infectious viruses Yes () No () - If "yes", explain and outline deactivation in Item 5

Carcinogenic agents Yes () No () - If "yes" explain and outline deactivation in Item 5

Other biohazards Yes () No () - If "yes" explain in Item 5

3. List experience of Principal Investigator relating to isotopes in detail.

4. The following persons who will use or be exposed to radiation under this authorization have been instructed by the Principal Investigator in the radiation protection problems and appropriate precautions to minimize exposure associated with the above isotope. Everyone using radioactive isotopes must be listed below and must attend a radiation safety seminar presented by the Radiation Safety Department prior to beginning work:

Principal user: _____ Others: _____

5. Please provide this information on a separate sheet and refer to specific sections (i.e., 5a, 5b, etc.).

A. Purpose: Indicate the purpose of this research project, microcurie or millicurie amounts which will be used for each experiment, and the chemical forms.

B. Security Procedures: Provide your procedures for the security and custody of radioactive material in keeping with the following requirements:

. Clearly designate persons (by title) authorized to sign for and receive the radioactive material packages for the laboratory. These individuals must be trained by the Principal Investigator to receive the packages and maintain custody. A specific statement is required that whoever receives the package for the laboratory will check the packing slip and the Release to verify that the package belongs to their laboratory, will maintain custody, and will not leave the package unattended until the material is properly stored and secured.

. Follow the current "Recommended Procedures for Opening Packages Containing Radioactive Material", Appendix VII in the Radiation Safety Procedures manual.

. Survey and open all radioactive material shipments immediately, and store contents in a secure radioisotope storage area.

. Destroy or deface all "radioactive labels" on or in empty containers. Empty containers must be surveyed for radioactivity prior to disposal in regular trash. Do not discard any closed boxes in regular trash. Remove all lids and dry ice from box and show box to be visibly empty.

C. Project Methodology: Outline methodology of the project emphasizing the safe handling of the radioactive material. Consider steps in your proposed protocol which are potentially hazardous or may generate dose rates or contamination potential.

D. Precautionary Procedure: Outline a precautionary procedure that will prevent the unauthorized use or removal of radioactivity while in your possession.

E. Surveys and Records: Conduct limited surveys after each experiment and a complete survey at least monthly. Maintain records of all survey results. Explain how your surveys will be conducted, list survey meters (manufacturer, model no., probe type, location) or other radiation detection instrumentation to be used, method of documenting results, and procedures for reporting spills, contaminated areas or personnel. Dry smears, using #41 Whatman filter paper and counted in a liquid scintillation counter, should be taken to survey areas and equipment for radioactive contamination resulting from work using C-14 and H-3.

F. Emergency Response: In case of accident, spill or personal contamination, contact the Radiation Safety Department at 432-3040 immediately. In addition, outline your plans for immediate control of the incident

6. List facilities and protective devices for handling isotope.

Caution signs & labels	()	Air sampling equipment	()
Hood	()	Survey meter(Attach list if nec.)()	()
Shielding	()	Mfgr. _____	
Stainless steel sink	()	Model No. _____ Location _____	
Absorbent material for benches	()	Probe type _____	
Mechanical pipette	()	Automated gamma counter	()
Disposable gloves	()	Mfgr. _____	
Film badges, body	()	Model No. _____ Location _____	
Film badges, ring	()	Liquid scintillation Counter	()
Glove box	()	Mfgr. _____	
Iodination hood	()	Model No. _____ Location _____	

7. RADIOACTIVE WASTE DISPOSAL - Nuclear Regulatory Commission and state regulations require written records of the disposition of all isotopes received.

A. Describe radioactive waste that will be generated, the storage conditions, and your recordkeeping system. Consider ways of minimizing waste and institute appropriate segregation of waste.

B. Will the radionuclide be used in living things? Yes ___ No ___

. name organism to be used: _____

. average weight or volume: _____

. total number of experimental units: _____

. amount of radioactivity per experimental unit: _____

. route of administration: _____

. will radioactivity be contained in the organism: _____

. will radioactivity be in:

1. exhaled air	Yes ___ No ___	N/A ___	Do not know ___
2. culture media	Yes ___ No ___	N/A ___	Do not know ___
3. urine	Yes ___ No ___	N/A ___	Do not know ___
4. feces	Yes ___ No ___	N/A ___	Do not know ___
5. carcass	Yes ___ No ___	N/A ___	Do not know ___

Please detail a procedure that will allow you to control and prevent the spread of radioactive contamination.

- . will Division of Animal Care be involved in caring for radioactive animals Yes ___ No ___
- C. Have you made arrangements with the Radiation Safety Dept. to obtain appropriate radioactive waste containers? ___
- D. If using animals, have you made provision for FROZEN storage of carcasses in your area, prior to pick-up by the Radiation Safety Department? (If large animals are to be used, adequate storage must be provided by the Principal Investigator.) ___
- E. Is there any possibility of a radioactive gas release? ___
- F. Have you planned a labeling system to enable you to correctly label what is in each container as to isotope, chemical form, date, and quantity when full? ___
- G. Have you read and understood the Radiation Safety Procedures manual concerning radioactive waste disposal procedures? ___
8. Signature below affirms that the applicant has read, understood, and will comply with the procedures set forth by the Yale University Radiation Safety Committee regarding the use of radioactive materials. These procedures are documented in the most recent revision of the University Radiation Safety Procedures manual. IN CASE OF PROLONGED ABSENCE OR TERMINATION, PLEASE NOTIFY THE RADIATION SAFETY DEPARTMENT AT 432-3040.

Signature: _____
Principal Investigator