



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
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KING OF PRUSSIA, PENNSYLVANIA 19406-1415

D. B. Howe

JAN 14 1994

MEMORANDUM FOR: John E. Glenn, Chief
Medical, Academic, and Commercial Use Safety Branch
Division of Industrial and Medical Nuclear Safety

FROM: Ronald R. Bellamy, Chief
Nuclear Materials Safety Branch
Division of Radiation Safety and Safeguards
Region I

SUBJECT: REVIEW OF REGION I LICENSE FILES FOR
INFORMATION CONCERNING RESEARCH USE OF
RADIOACTIVE MATERIAL IN HUMANS

In a memorandum from Hugh L. Thompson, Jr., Deputy Executive Director for Nuclear Materials Safety, Safeguards and Operations Support, EDO to Timothy T. Martin, Regional Administrator, Region I, it was requested that we review at least five Region I license files of licensees who we believed might have been involved in human research prior to the dissolution of the Atomic Energy Commission. We were asked to identify any information in the files on human research which was not directed at development of radiopharmaceuticals and to supply you with this information. Attached are the results of the reviews of thirteen license files. It should be noted that Region I has a large number of licensees who fit the criteria of the request and, given the short time given for the initial reviews, many were not reviewed. Also, some of the information from the files reviewed has been archived and was not available for review. The reports for each review identify the oldest inspection document and the oldest correspondence reviewed as requested by Donna Beth Howe in a telephone conversation with Keith D. Brown of my staff on January 12, 1994.

The reports of the records give all information which was available in the files. Most of the detailed information requested, such as the dates of the studies and the sponsor of the research, was not found in the files, and is not included in the reports. Although no individual subjects were identified, three reports identify the subjects as residents of a certain institution.

Any questions concerning this review should be directed to Keith D. Brown of my staff at (215) 337-5048.

Ronald R. Bellamy
Ronald R. Bellamy, Chief
Nuclear Materials Safety Branch
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and Safeguards

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Enclosures: As stated

cc: W. Hehl, RI
D. B. Howe, NMSS

Licensee: Harvard University
License Number: 20-00297-53
Docket Number: 030-00753
Earliest records in file: Inspection records from November 18, 1968
Licensing Correspondence from April 9, 1974

Reports on records of research use in humans other than development of radiopharmaceuticals:

1. A copy of a letter dated September 7, 1972, which was found in the Massachusetts General Hospital license file, requests amendment of the Harvard University license to permit a research project by the Psychiatry Department using low levels of radioactive material which is to be carried out at the Mattapan Chronic Disease Hospital in Mattapan, Massachusetts.

Licensee: Massachusetts General Hospital
License Number: 20-03814-80
Docket Number: 030-01867
Earliest records in file: Inspection records from August 25, 1965
Licensing Correspondence from June 23, 1963

Reports on records of research use in humans other than development of radiopharmaceuticals:

1. An application for amendment of the license and associated cover letter dated June 23, 1963 requests permission to perform a study of chronic ethanol ingestion on ethanol metabolism in alcoholic subjects using ^{14}C labeled ethanol. The principal investigator is identified as Jack H. Mendelson, M.D., Associate in Psychiatry at the Harvard Medical School and Associate Psychiatrist at the Massachusetts General Hospital. The subjects of the study were to receive two doses of 10 microcuries of ^{14}C each. An application dated July 31, 1963 makes the same request.
2. A letter dated June 27, 1963 providing Dr. Mendelson's experience with isotopes discusses a study to measure exchangeable magnesium in twenty-four alcoholic subjects suffering withdrawal symptoms which used ^{28}Mg , an accelerator produced isotope.
3. An application for renewal of a research license for John B. Stanbury, M.D. (License Number 20-03814-42) requests the following for use in research in humans:
 - Up to 50 microcuries of ^{131}I -labeled amino acids and iodoalbumin for measurement of disappearance rates and metabolic fates of these compounds.
 - Up to 10 microcuries of ^{14}C -labeled paraldehyde for a study of the metabolic fate of this substance.
 - Up to 500 microcuries of ^{125}I for metabolic studies of patients with familial goiter.
 - 0.16 nanocuries of ^{129}I for a study of the kinetics of iodine metabolism.
4. A letter dated June 17, 1964 requesting increase in the license limit for ^{90}Sr applicators states that Massachusetts General Hospital intends to eventually use the applicators for intra-cardiac lymphocyte irradiation.
5. Letters dated June 28, 1968, October 29, 1968, November 4, 1968 and January 2, 1970 discuss a study on the effects of light on calcium metabolism in man using $^{47}\text{CaCl}_2$. The principal researcher is Robert M. Neer, M.D., who indicates that he

has used ^{47}Ca in humans during a previous study at the National Institutes of Health. The original request indicates that the subjects are to be given five separate doses of 1 microcurie of ^{47}Ca each, resulting in a dose to each subject of 450 millirem to the gut. The October 29, 1968 letter states that each subject will actually be given three doses of 10 microcuries each. The researcher estimated that each subject received a 2 rad dose to the bone. The dose to the gut of each individual was, presumably, 2700 millirem based on the previously submitted estimates.

Subject participants were residents at the Commonwealth of Massachusetts Soldiers' Home at Chelsea, Massachusetts, also known as the Chelsea Old Soldiers' Home. The first part of the study involved twenty four subjects, all over fifty years old. The January 2, 1970 letter indicated that this study had been completed and requested authorization to involve twenty-four additional subjects, which was granted.

The original amendment requests cites the following three journal articles reporting similar studies using ^{47}Ca :

Journal of Nutrition **89**:283 (1966)

Journal of Clinical Investigation **44**:128 (1965)

Science **144**:1155 (1964)

6. A letter dated March 6, 1973 requests amendment of the license to allow a study under Dr. Majic Potsaid on copper metabolism in children with symptoms of Menkes' Kinky Hair Syndrome to be carried out at University Affiliated Center for the Mentally Retarded of the Walter E. Fernald State School, which subsequently became the Eunice Kennedy Shriver Center for Mental Retardation. The study was to use ^{64}Cu in humans. The letter speaks of a continuing and formal agreement between the hospital and the school since November 3, 1964 which specifies joint research proposals.

Licensee: Massachusetts Institute of Technology
License Number: 20-01537-02
Docket Number: 030-00763
Earliest records in file: Inspection records from September 2, 1970
Licensing Correspondence from December 21, 1967

Reports on records of research use in humans other than development of radiopharmaceuticals:

1. There is a discussion in inspection notes from October 29, 1969 of research involving the use of up to 100 microcuries of ^{125}I and ^{131}I per experiment in humans to study metabolic routes and compounds formed. About one study a month was being performed by Dr. J. B. Stanbury.
2. A letter dated January 2, 1975, which was part of a renewal package, discusses research which had previously been done in humans. It is not clear at present whether these experiments were ongoing at the time of the January 2, 1975 letter. The types of studies and the details provided were as follows:
 - a. bone densitometry involving radiation. The dose at the point of entry was estimated to be 0.8 millirad and the pelvis was estimated to receive 0.5 millirad.
 - b. thyroid disorders using ^{125}I and ^{131}I . Doses were estimated to be 3 to 100 rads to the thyroid and 200 to 470 millirad to the whole body.

Licensee: Princeton University

License Number: 29-05185-24

Docket Number: 030-00882

Earliest records in file: Inspection records from May 20, 1980
Licensing Correspondence from August 9, 1962

Reports on records of research use in humans other than development of radiopharmaceuticals:

No human use of any type identified.

Licensee: Rutgers University

License Number: 29-05218-28

Docket Number: 030-00883

Earliest records in file: Inspection records from June 4, 1968
Licensing Correspondence from February 14, 1969

Reports on records of research use in humans other than development of radiopharmaceuticals:

No human use of any type identified.

Licensee: United States Department of Agriculture
License Number: 19-00915-03
Docket Number: 030-04530
Earliest records in file: Inspection records from November 13, 1968
Licensing Correspondence from December 28, 1978

Report on records of research use in humans other than development of
radiopharmaceuticals:

None identified

Licensee: United States Department of Health and Human Services
National Institutes of Health

License Number: 19-00296-10

Docket Number: 030-01786

Earliest records in file: Inspection records from October 30, 1967
Licensing correspondence from January 17, 1974

Report on records of research use in humans other than development of
radiopharmaceuticals:

None identified

(See also report on Massachusetts General Hospital License)

Licensee: University of Medicine and Dentistry of New Jersey

License Number: 29-02957-13

Docket Number: 030-09926

Earliest records in file: Inspection records from October 5, 1984
Licensing Correspondence from October 16, 1972

Reports on records of research use in humans other than development of
radiopharmaceuticals:

None identified

Licensee: University of Pennsylvania
License Number: 37-00118-07
Docket Number: 030-02939
Earliest records in file: Inspection records from March 20, 1967
Licensing Correspondence from December 4, 1958

Reports on records of research use in humans other than development of radiopharmaceuticals:

1. There is a discussion in inspection notes from March 20 through 23, 1967 of the research use of radioactive material in humans. The report notes that ^{14}C compounds are used in humans in microcurie quantities and that 50 microcuries of ^3H -dizatoxin is being used in studies of the heart. It also states that ^{32}P , ^{51}Cr , RISA, ^{60}Co , and ^{59}Fe are use in research in humans.
2. The inspection notes from August 24, 1973 mention that human research is performed under the license, but provide no details.
3. A December 4, 1958 licensing request asks that the University of Pennsylvania be authorized to release patients who have received permanent implants of ^{192}Ir sources (for an experimental treatment of cancer). The amendment was granted with certain restrictions, most of which are not apparent from the records in the file. Later correspondence states that, because of difficulties complying with the restrictions, no patients were released under the amendment.
4. In a telephone call made on February 13, 1967 and recorded in a note to file, Dr. Frank Gardner informed the Atomic Energy Commission that he will be doing human research at the University of Pennsylvania under the protocols he had previously submitted under the Peter Bent Brigham Hospital license (License Number 20-00551-18). Records of those protocols are not in the Region I files.
5. An October 15, 1969 letter requested authorization to use ^{252}Cf sources for implantation in cancerous tumors in an experimental program to study treatment of these tumors with neutrons. The sources would be afterloaded into polyethylene tubes which had been implanted in the tumor. The letter stated that they intended to treat thirty to sixty patients per year in this way. Initially, they intended to give a dose at the surface of 1000 rads total (the letter states only this dose) in ten fractions. If the patients showed good tolerance to this dose, later patients would receive 2300 to 2700 rads total.

Licensee: University of Medicine and Dentistry of New Jersey

License Number: 29-15188-01

Docket Number: 030-08709

Earliest records in file: Inspection records from May 18, 1973
Licensing Correspondence from June 10, 1977

Reports on records of research use in humans other than development of
radiopharmaceuticals:

None identified

Licensee: Veterans Administration Hospital
Philadelphia, Pennsylvania

License Number: 37-00062-07

Docket Number: 030-14526

Earliest records in file: Inspection records from May 11, 1979
Licensing Correspondence from December 8, 1978

Reports on records of research use in humans other than development of
radiopharmaceuticals:

None identified

Licensee: Veterans Administration Hospital
Northport, Long Island, New York

License Number: 31-13511-04

Docket Number: 030-12712

Earliest records in file: Inspection records from February 29, 1973
Licensing Correspondence from December 29, 1976

Reports on records of research use in humans other than development of
radiopharmaceuticals:

None identified

Licensee: Veterans Administration Hospital
New York, New York

License Number: 31-00032-04

Docket Number: 030-02611

Earliest records in file: Inspection records from September 14, 1967
Licensing Correspondence from December 20, 1973

Reports on records of research use in humans other than development of
radiopharmaceuticals:

None identified