

Georges Road
New Brunswick, New Jersey 08901
(201) 545-1300



E.R. Squibb & Sons
United States

April 3, 1985

U.S. Nuclear Regulatory Commission
Nuclear Material Licensing Section
631 Park Avenue
King of Prussia, PA 19406

Dear Sirs:

Enclosed are six copies of changes to update
E. R. Squibb & Sons Radiological Contingency Plan.
Squibb's Byproduct Material License number is
29-00139-02.

Thank you,

D. K. Balkunow
Radiation Safety Officer

DKB/ldl

Enclosure:

| | |
|------------------|-----------------------|
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1.0 GENERAL DESCRIPTION OF PLANT/LICENSED ACTIVITY

1.1 Licensed Activity Description

E. R. Squibb and Sons, Inc. of New Brunswick, New Jersey is the holder of Materials License No. 29-00139-02 issued by the Nuclear Regulatory Commission for its radiopharmaceutical operations. The license includes authorization for the possession and use of byproduct materials of any form, with atomic numbers 8-83, inclusive. The maximum total quantity of radionuclides in this atomic number range is 50 curies, except: 5 curies of hydrogen-3, 150 curies of iodine-131, 5 curies of iodine-125, 20 millicuries of phosphorus-32, 2 curies of chromium-51, 50 millicuries of cobalt-60, 5 curies of selenium-75 and 2000 curies of molybdenum-99/technetium-99m. The license authorizes the use of the materials in research and development, and processing for distribution to authorized recipients. With the exception of a few research activities utilizing small quantities of radioactive materials, manufacturing operations are performed in the Medotopes building (Bldg. 124). (See Addendum I for license.)

1.2 General Description of the Plant/Licensed Activity

E. R. Squibb & Sons, Inc. owns and operates a pharmaceutical manufacturing and research facility in Middlesex County, New Jersey. Physically, the site occupies about 80.9 acres in the township of North Brunswick.

Geographically, the site can be represented at 40 degrees, 28 minutes, and 25 seconds North; and 74 degrees, 28 minutes, and 25 seconds West.

The topography of the site is relatively flat; elevations close to 120 feet above sea level are found near the center of the site; elevations near either end of the site are approximately 105 feet above sea level.

There are approximately 40 individual structures, ranging in height from 10 feet to 75 feet above grade. Site coverage for each ranges between 5,000 and 150,000 square feet. Uses include warehousing of raw materials and finished products, animal study facilities, analytical and pilot plant laboratories, utilities and maintenance services, bulk chemical processing finished product processing and packaging, and administrative offices.

Parking facilities cover about 17% of the entire site.

Control apparatus consist of steel filter enclosures with particulate filters of varying efficiency and activated carbon filters on the suction side of fans discharging to the stack.

The reduction in the radioactive iodine concentration through the material used at our facility is at a minimum factor of 5 per centimeter of bed depth for radioiodine as methyl iodide at a flow rate of 40 fpm, 70% relative humidity and air temperature of 25 degrees C. For this reason, the theoretical filtration efficiency is approximately 99.9%.

Data accumulated at the Medotopes facility show that over the course of a year, approximately 0.4% of the amount of I-131 that is used in the facility is presented to the air handling system.

For practical purposes in our calculations, the theoretical efficiency has been assumed to be 99%. On this basis, the total radioiodine transmitted to the atmosphere should not exceed .004% of the radioiodine handled, or less than 50 microcuries per Curie of radioiodine used in the facility.

The combination of particulate and gaseous filters described serves to reduce the effluent of other radionuclides such as Se-75, Mo-99, etc. to the lowest practicable level.

Confinement Systems (Liquid)

Liquids with low-level radioactivity; e.g., glassware washing water and water from hand sinks in materials handling areas, are collected in holdup tanks. There are four separate tanks, each having a capacity of 3.8×10^4 liters. Current liquid generation rates permit approximately a three-month decay of the holdup tank effluent. Tanks are sampled as necessary and released to the sanitary drain, if contents satisfy the concentration limits for such release. The remainder of the liquid wastes (approximately 6.6×10^6 liter/day) from the site is sanitary waste and is released without treatment of monitoring.

Alarm Systems

The manufacturing areas in building 124 are equipped with remote monitoring detectors. These are calibrated quarterly to produce a blue warning light and an audible alarm in the work area and in health physics operations area should background radiation levels reach 50 mr/hr. If the level of radiation is measured at 100 mr/hr or greater, a red light and alarm will be activated on the health physics control panel.

SQUIBB PROCESS FLOW DIAGRAM / I-131

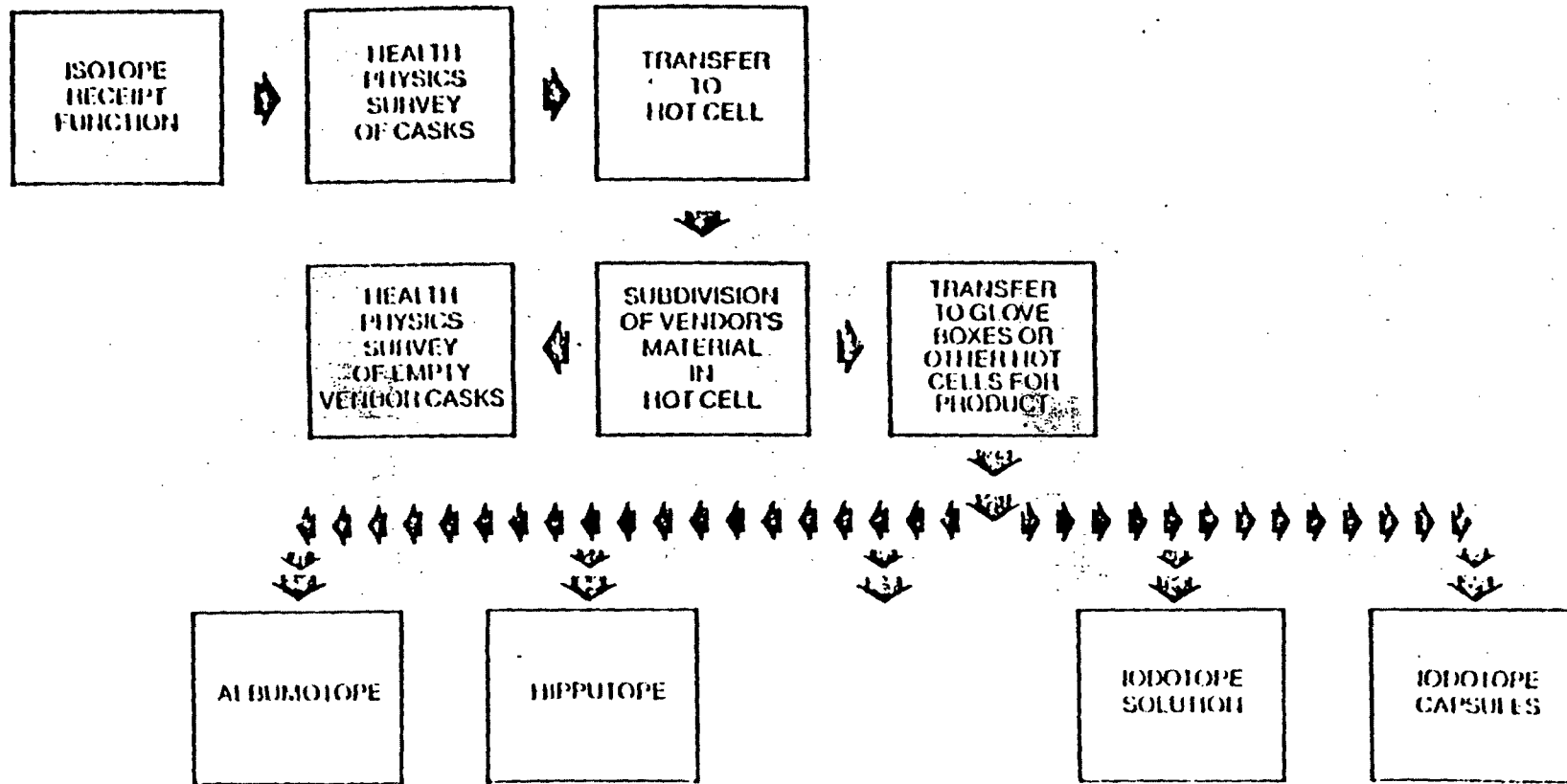


Figure 5

This isotope is diluted to the desired radioactive concentration and the solution pH checked and adjusted, if necessary. A calculated volume of the diluted isotope is loaded onto nonradioactive support columns to achieve the desired activity. These columns are placed into shielded containers and removed from the hot cell. Each unit is checked for total activity and placed into an appropriately labeled plastic container. This unit is packaged into a shipper and transferred to the distribution area for subsequent delivery to a customer.

1.3.2 I-131 Process Flow (Figure 5)

Iodine I-131 is supplied by a contracted vendor on a weekly basis. At the time of receipt, the isotope is logged in and assigned an identification number. The cask is then checked by Health Physics for radiation level and external contamination. After Health Physics's approval, the cask is transferred to a hot cell. The shielded container is transferred into the hot cell where the prime container is removed. The shielded container is then removed from the cave and the cask checked by Health Physics prior to return to the vendor. Based on radioactive concentration, the vendor's isotope is allocated to various product processes requiring I-131. The required activity is measured out in the hot cell and placed into a glass bottle. The bottle is placed in a bulk transfer pig and then taken from the hot cell to the glovebox or hot cell designated for that particular product preparation. At this time, Iodine I-131 is subdivided for the preparation of Albumotope, Hippotope, Iodotope Solution, and Iodotope Capsules.

2.0 ENGINEERED PROVISIONS FOR ABNORMAL OPERATIONS

2.1 Criteria for Accommodation of Abnormal Operations

The design criteria of the plant are based on state of the art technology to ensure prompt detection of abnormal conditions and to limit releases of radioactive materials in the event of a radiological emergency.

2.1.1 Process Systems

The facility layout is such that movement of supplies, equipment and materials into processing areas does not interfere with adjacent work areas. The layout provides for easy access for purposes of maintenance and efficiency of operation. No unnecessary movement of materials is permitted through areas in which exposure to radiation could occur. Personnel movement in the facility does not require passage through radiation areas to gain access to nonradioactive materials areas.

2.1.3.3 Access and Egress of Operating Personnel and Emergency Response Teams

2.1.3.3.1 Onsite

The radiopharmaceutical operations are conducted on the ground floor of the plant making access and egress for the evacuation of personnel an easy task. There are no elevators and the only stairways are those located in the unrestricted office areas and those leading to the second floor machine room.

In addition to the exits used routinely, the plant is also equipped with alarmed emergency exits.

The access control system has been designed to prohibit inadvertent or unauthorized access to high radiation areas and to provide personnel with the knowledge of the presence of radiation or radioactive materials. The access control system eliminates unnecessary exposure and assures exposures are maintained within regulatory limits.

One of the first indications to personnel of a potential hazard is the presence of caution signs at the entrance to radiation areas and labels on the containers of radioactive materials.

2.1.3.3.2 Near Site

Access and egress including the offsite evacuation of personnel as well as for onsite response by offsite based emergency response participants have been established at two site locations; 1) the Ward Street, and 2) the US #1 entrances.

2.1.3.4 Fire and Explosion Resistance and Suppression

All buildings within the site are provided with portable fire extinguishers distributed and maintained in accordance with NFPA 10, as required under the provisions of the OSHA 1910 subpart L.

The plant is provided with Class II interior 1 1/2" hose lines installed in accordance with NFPA 14 and maintained as specified under subpart L of OSHA 1910.

Every work area where radioactive materials are stored, processed or tested is equipped with automatic sprinklers. It is expected that the hot cells which are constructed of steel, concrete and lead, equivalent to 4 to 8 inches of lead will serve as primary containment following an explosion. The building and the building's charcoal filtration systems are considered secondary containments.

4.2.1.1 **EMERGENCY ORGANIZATION - CHAIN OF COMMAND
EMERGENCY MONITORING TEAM PERSONNEL**

PLANT EMERGENCY DIRECTOR

Health Physics Department Head
or Alternate

-----12-----
Health Physics Supervisor
or Alternate

-----13-----
Health Physics Supervisor
or Alternate

Plant Emergency Director Alternates

One Health Physics Supervisor, or
Radiopharmaceutical Department Head, or
Radiopharmaceutical Quality Control Department Head

Emergency Team Alternates

One (1) Radiopharmaceutical Section Head, or
Four (4) Radiopharmaceutical Shift Supervisors
and/or Radiopharmaceutical Quality Control Shift Supervisors.

4.2.1.2 **Authority and Responsibilities**

Radiopharmaceutical Plant Emergency Director

A. Notification of Unusual Event Follow-up Actions

- Evaluate the emergency through the emergency assistance group and as quickly as possible, determine if the incident is causing the release of radioactivity beyond the restricted area of the radiopharmaceutical production building.
- Designate Health Physics personnel to proceed to the scene with appropriate monitoring and emergency equipment.
- Proceed to and take charge of the Emergency Coordination Center (Health Physics Office).

The direct line phone between the Building 31 Gate House, Control Center and the North Brunswick Police Headquarters will also be used.

4.2.2.11 Fire Department

A. Fire Chief

The Fire Chief is responsible for the training of fire fighting personnel, the purchase and maintenance of fire fighting equipment in the plant and pre-plan of emergencies which might occur at the facility. His responsibilities include:

- A complete knowledge of the over-all plant layout, including construction, location of personnel hazardous areas, location of entrances and exits, and plant conditions requiring special fire fighting techniques.
- The organization and training of the fire brigade.
- The maintenance of fire fighting equipment.
- The direction of all fire fighting activities.
- An over-all knowledge of primary and secondary fire protection water systems in and immediately adjacent to the plant.
- Liaison with municipal, county and state fire fighting organizations.
- A knowledge of the duties of the other elements which make up the Disaster Organization to permit the maximum coordination in an emergency.

B. Fire Department Functions

In the event of fire, explosion, or existence of other emergency, a call is placed to the Building 31 Security Gate House by dialing Ext. 3011. Upon report of the emergency, the guard sounds the proper building evacuation signal. The personnel in the building (Radiopharmaceutical Bldg. 124) are evacuated by an interior fire alarm system (continuous sounding of bells or sirens). The emergency radio paging alert is broadcast and the plant air whistle for zone 4, designates the area of emergency within the site.

The plant fire brigade members respond to Bldg. 63 (fire house) and confirm the location of the alarm from the guard by direct phone from the gate house. The brigade responds with the engine and squad vehicle to the alarm location. The Zone Engineers on duty for the pump houses will report to and attend the sprinkler systems fire pumps. In event a building sprinkler head is discharging water on the fire, a fire pump will automatically start sending a signal to the guard house who notifies the fire brigade and the zone engineer. Water flow from sprinkler heads, initiates the building's local sprinkler water motor gong. The senior fire officer on duty will assume immediate command of all fire fighting activities. Should he decide that a site emergency exists, he immediately initiates the Emergency Management Plan.

The officer in charge will keep the management informed of all activities in the field. Where assistance is needed for fire fighting or during off-shift periods, the plant guard will alert the North Brunswick 31 Gate House. If additional help is needed beyond local Mutual Aid capacity, Middlesex County Fire Coordinator will be alerted by the North Brunswick Fire Department.

When a disaster exists, all Production Personnel will begin shut-down and evacuation procedures as directed by Plant Management. Areas remote from the disaster area may continue to discontinue operations as directed by Plant Management.

4.2.2.12 First Aid Squad

The Squibb First Aid Squad is a member of the New Jersey State First Aid Council and conforms to the 5 point statewide minimum training and proficiency standards. The squad manning of 30 people covers all shifts and are alerted by paging radios initiated through the main security post, where all medical emergencies are reported by dedicated extension 3033.

Certain First Aid personnel are assigned to respond to all calls with the Squad's fully equipped ambulance. The site is divided into four zones with first aid personnel assigned within those zones responding directly to the scene of medical emergencies within their zone. First aid kits and certain other equipment such as a containment stretcher for radiopharmaceutical use are located throughout the plant site. Squad members receive training monthly during regular two hour drill sessions.

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A general emergency exists when:

- A. Any condition which threatens to cause the release of radioactive material beyond the site boundary in quantities expected to exceed EPA Protection Action Guideline exposure levels offsite.
1. Events are in process or have occurred which involve actual imminent loss of confinement integrity.
 2. A radiation dose rate of 10 mr/hr at the site boundary or concentration of radioactive material greater than MPC beyond the site boundary.
- B. A major fire involving the release of large amounts of radioactive material.

5.2 Assessment Actions

5.2.1 Notification of Unusual Event

- a. When an unusual event occurs, the following procedures should be implemented to alert response personnel and to notify management of the incident.

The individual(s) suspecting that an unusual event has occurred shall notify Health Physics personnel immediately, by telephone, plant intercom system and/or in person.

Intercom: 63 or 60

Telephone: 2168

Health Physics personnel shall immediately notify the Health Physics Department Head or his designee by intercom, telephone and/or in person.

Intercom: 14 or 60

Telephone: 2451 or 3158

| | Office | Home |
|--------------------|--------|--------|
| Daniel K. Balkunow | 2451 | (b)(6) |
| Edward Truskowski | 3158 | |

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The Health Physics Department Head shall notify:

| | Extension | |
|---|--|------------|
| 1. Squibb Medical | 3033 | |
| Squibb Fire | 3011 | |
| Squibb Police | 2111 | |
| Middlesex General Hospital | 828-3000, ext. 286 (if required) | |
| 2. Radiopharmaceutical Department Head | | |
| | Office | ---None--- |
| G. Thompson or designee | 3061 | (b)(6) |
| J. Frankowski | 3063 | |
| 3. Nuclear Regulatory Commission | 215-337-5000 | |
| 4. N.J. State Department of Environmental Protection | 609-882-2000 609-292-5586,7,8 609-292-7372 | |

- b. The emergency assistance team or alternate shall proceed to the immediate area of emergency with special monitoring equipment and determine the extent of the emergency.
- c. The affected area shall be isolated with a barricade and warning signs shall be placed on all entrances leading to the emergency area.
- d. All personnel not immediately involved with the emergency shall report to an area designated by the emergency team or alternate.

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5.2.2 Alert

- a. Persons discovering the emergency condition shall notify the Health Physics Office by the most expeditious means available (Telephone 2168; Intercom 60 or 63.)
- b. Health Physics personnel or shift supervisors sounds the appropriate alarm within the plant and notify the Health Physics Department Head or his designee:

Health Physics Department Head: Office Home

D. K. Balkunow 2451
or designee

E. Truskowski 3158

(b)(6)

- c. The Health Physics Department Head shall notify:

1. Medical Ext. 3033
2. Fire Ext. 3011
3. Police Ext. 2111
4. Middlesex General Hospital - 828-3000, ext. 286
5. New Brunswick Police - 201-745-5400
6. North Brunswick Police - 201-545-3200
7. Radiopharmaceutical Department Head or designee:

Office

Home

G. Thompson 3061
or designee,

J. Frankowski 3068

(b)(6)

8. Nuclear Regulatory Commission - 215-337-5000

9. N.J. State Department of Environmental Protection
609-882-4200

609-882-2000

609-292-5586, 718

609-292-7372

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d. The Radiopharmaceutical Department Head shall notify:

V. P. & General Mgr., Sq. Diagnostics

Office

Home

M. Loberg

2203

(b)(6)

e. The Health Physics Department Head shall notify:

V. P. of Quality Control

E. A. Gusmano

3191

(b)(6)

f. Persons in the immediate area of the emergency condition shall take appropriate action to limit the extent of the incident with available means to the extent possible, then retreat to a safe location and await assistance.

g. All shift personnel, not immediately involved with the incident, shall report to the area designated by the Health Physics or shift supervisors.

5.2.3 Site Area Emergency

a. Persons discovering the emergency condition shall immediately notify the Health Physics Office by the most expeditious means available.

b. Telephone ext. 2168

or

Intercom 60 or 63

c. Health Physics personnel or shift supervisors sound the appropriate alarm (horn) within the radiopharmaceutical production building and notify the Health Physics Department Head or his designee:

Health Physics Department Head: Office

Home

D. R. Balkunow
or designee,

2451

(b)(6)

E. Truskowski

3158

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d. The Health Physics Department Head shall notify:

1. Medical Ext. 3033
2. Fire Ext. 3011
3. Police Ext. 2111
4. Middlesex General Hospital -828-3000, ext. 286
5. New Brunswick Police - 201-745-5400
6. North Brunswick Police - 201-545-3200
7. Radiopharmaceutical Department Head or designee:

| | Office | --Home-- |
|---|--------|--------------|
| G. Thompson or designee, | 3061 | (b)(6) |
| J. Frankowski | 3063 | |
| 8. Nuclear Regulatory Commission - | | 215-337-5000 |
| 9. N.J. State Department of Environmental Protection- | | 609-882-4200 |
| | | 609-882-2000 |
| | | 609-292-5586 |
| | | 609-292-5587 |
| | | 609-292-5588 |
| | | 609-292-7372 |

e. The Health Physics Department head shall notify:

| | Office | --Home-- |
|-----------------------------|--------|----------|
| V. P. Gen. Mgr. Diagnostics | | |
| M. Loberg | 2203 | (b)(6) |

f. The Health Physics Department Head shall notify:

| | | |
|-----------------------|--------|----------|
| V. P. Quality Control | Office | __Home__ |
| E. A. Gusmano | 3191 | (b)(6) |

g. Persons in the immediate area of the emergency condition shall take appropriate action to limit the extent of the incident with available means to the extent possible, then retreat to a safe location and await assistance.

h. Shift operating personnel, not immediately involved with the incident, report to the Health Physics Office.

5.2.4 General Emergency

a. Person(s) discovering the emergency condition shall immediately notify the Health Physics Office by the most expeditious means available (Tel. 2168: Intercom 63 or 60.)

b. Health Physics personnel or shift supervisors sound the appropriate alarm within the radiopharmaceutical production building and notify the Health Physics Department Head or his designee:

Health Physics Department Head: Office __Home__

| | | |
|----------------|------|--------|
| D. K. Balkunow | 2451 | (b)(6) |
| or designee, | | |

| | | |
|---------------|------|--|
| E. Truskowski | 3158 | |
|---------------|------|--|

c. The Health Physics Department Head will notify:

1. Medical Ext. 3033
2. Fire Ext. 3011
3. Police Ext. 2111
4. Middlesex General Hospital - 828-3000, ext. 286
5. New Brunswick police - 201-745-5400
6. North Brunswick Police - 201-545-3200

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7. Radiopharmaceutical Department Head or designee:

| | Office | Home |
|-----------------------------|--------|--------|
| G. Thompson or designee, | 3061 | (b)(6) |
| J. Frankowski | 3063 | |

8. Nuclear Regulatory Commission - 215-337-5000

9. N. J. State Department of Environmental Protection

609-882-4200

609-882-2000

609-292-5586, 7, 8

609-292-7372

d. The Radiopharmaceutical Department Head shall notify:

V.P. & Mgr. Squibb Diagnostics Office Home

M. Loberg 2203 (b)(6)

e. The Health Physics Department Head shall notify:

V. P. Quality Control

E. A. Gusmano 3191 (b)(6)

f. Persons in the immediate area of the emergency condition shall take appropriate action to limit the extent of the incident with available means, to the extent possible, then retreat to a safe location and await assistance.

5.3 Corrective Actions

5.3.1 Notification of Unusual Event

a. The Emergency Director shall designate personnel to proceed to the scene of the emergency with the necessary equipment to meet the emergency. These persons will evaluate the extent and magnitude of the emergency, determine if radiation hazards exist and report their findings to the Emergency Director.

- b. The Emergency Director shall direct actions necessary to bring the emergency under control with the help of the emergency assistance team and/or the designated alternates.
- c. Surveys and bioassays for personnel involved with the emergency will be instituted immediately.

5.3.2 Alert Condition

Plant Emergency Director

- a. Proceed to and take charge of the Emergency Coordination Center.
- b. Determine if the assembly point is in a safe area through the use of portable survey instruments.
- c. Evaluate the emergency as quickly as possible, and determine if the incident is causing a release of activity outside the plant which could result in a site emergency.
- d. Dispatch monitoring team to the scene of the emergency with the emergency kit to evaluate the extent and magnitude of the emergency and survey the area along the boundary.
- e. Direct Radiopharmaceutical Production Supervisors to a check of time card rack and visitors' log book to determine what personnel other than the emergency team personnel have not left the plant.
- f. Notify the following members of management:
 - Radiopharmaceutical Manufacturing Department Head
 - Squibb Plant Manager
 - Diagnostics Quality Control Department Head
 - Plant Security Head
 - Plant Medical Department Head
 - Other personnel as required
- g. Set up necessary auxiliary communications (walkie-talkie), if necessary.

- h. Establish barricades with Plant Security force at the plant boundary to restrict areas to the plant.
- i. If there are injured personnel, notify the senior medical representative.
- j. Provide a Health Physics representative to accompany the patient to the hospital with the ambulance emergency kit, to maintain radiological controls in the hospital.
- k. Supervise collection of emergency data in the Emergency monitoring log.

5.3.3 Site Emergency

Plant Emergency Director

- a. Proceed to and take charge of the Emergency Coordination Center.
- b. Determine if the assembly point is in a safe area through the use of portable survey instruments. If this assembly point is not safe (greater than 100 mr/hr), direct personnel to the Squibb parking lot.
- c. Evaluate the emergency and, as quickly as possible, determine if the incident is causing a release of activity offsite and could result in a general emergency.
- d. Dispatch monitoring team to the scene of the emergency with the emergency kit, to evaluate the extent and magnitude of the emergency and survey the area along the site boundary. If levels exceed 10 mr/hr or MPC, declare a general emergency.
- e. Direct Radiopharmaceutical Production Supervisors to make a check of time card rack and visitors' log book to determine what personnel other than the emergency team personnel have not left the plant.
- f. Notify the following members of management:
 - Radiopharmaceutical Manufacturing Department Head
 - Squibb Plant Manager
 - Diagnostics Quality Control Department Head
 - Plant Security Head

- Plant Medical Department Head
 - Other personnel as required
- g. Set up necessary auxiliary communications (walkie-talkie), if necessary.
 - h. Establish barricades with Plant Security force at the site boundary gate houses to restrict access to the site.
 - i. Evaluate the emergency and, as quickly as possible, determine the release of radioactivity. Refer to Addendum V for methodology and parameters used in calculating atmospheric dispersion and dose rates to individuals.
 - j. If there are injured personnel, notify the senior Medical Representative.
 - k. Provide a Health Physics representative to accompany the patient to the hospital with the ambulance emergency kit, to maintain radiological controls in the hospital.
 - l. Supervise collection of emergency data in the Contingency Monitoring Log.
 - m. Notify Plant Security to institute site industrial emergency and disaster control plan, if necessary.

5.3.4 General Emergency

- a. Note the wind direction, instruct security to evacuate onsite personnel, if necessary, through the upwind exits of the site and sound the evacuation alarms.
- b. Notify the following members of Squibb Management:
 - General Manager Diagnostics Division
 - Diagnostics Quality Control Department Head
 - Radiopharmaceutical Quality Control Department Head
 - Plant Security Head
 - Plant Medical Department Head
 - Other personnel as required

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E. R. SQUIBB & SONS, INC.

EMERGENCY CALL LIST

| ----- Title ----- | Squibb Extension |
|--|---------------------|
| V.P. and General Manager Dianostics Division | 2203 |
| Dir. Engineering & Maintenance | 3587 |
| Radipharmaceutical Mfg Dept Head | 3061 |
| VP Quality Control | 3191 |
| Health Physics Department Head | 2451 |
| Health Physics Supervisor | 3158 |
| Health Physics General Supervisor | 2168 |
| Plant Security Head | 2101 |
| Dir Personnel & Ind Rel | 3034 |
| Director Employee Health | 2845 |
| Manager Ind Hygiene and Safety. | 2885 |
| Diagnostic Quality Control Department Head | 2419 |

NOTE: An updated emergency list of home addresses and telephone #'s are maintained by Security and Health Physics.

Nuclear Regulatory Commission (215) 337-5000

NJ State Dept. of Environmental
Protection (609) 882-4200
(609) 882-2000
(609) 292-5586
(609) 292-5587
(609) 292-5588
(609) 292-7372

- g. Place patient and ambulance emergency kit in the vehicle and transport to hospital.
- h. A representative from Health Physics will accompany the victim(s) to the hospital to maintain radiological control.

Medical Department

A. Director of Employee Health

This individual is responsible for all medical problems associated with a plant disaster, assisted by other members of the Medical Dept. and working in cooperation with members of the First Aid Squad and the Manager of the Industrial Hygiene and Safety Dept. His responsibilities include:

- 1. Providing adequate facilities and supplies for first aid treatment of injured employees.
- 2. Providing adequate means for transportation of casualties from the disaster area.
- 3. Establishing liaison with area hospitals.

B. Medical Supplies

These are stored in the emergency locker in Bldg. 124 and consist of air packs, towels and sheets, dosimeters for medical and first aid personnel and a fully equipped first aid kit. There is an emergency carrier in which severely injured patients can be decontaminated. Decontamination of less severely injured patients can be carried out in showers near the work site. The First Aid Ambulance is equipped with additional supplies including splints and oxygen.

C. Procedure

When the emergency call is received in the Medical Dept. on the day shift, a doctor and nurse will go to the First Aid Area in Bldg. 124. Simultaneously the guard in the Building #31 Gate House is notified and will dispatch the ambulance and members of the squad on duty. The decisions as to appropriate treatment and disposition will be made by the doctor.

On the second and third shifts when no doctor is present in the plant, the First Aid Squad members will report to the First Aid Area in Bldg. 124 and make the decision as to appropriate disposition. The nurse in the Medical Department is to be notified as to the number of patients and nature of injuries and will call

the designated hospital with this information. If no nurse is on duty the First Aid Squad will call.

If the number of patients requires it the guard will call the North Brunswick Squad and other back-up squads as needed.

If not in the plant the Medical Director or his assistant is to be called.

- D. The nurse on duty from 4:30 p.m. to 7:00 a.m. will follow the instructions outlined above.
- E. From 11:00 p.m. Friday, until 7:00 a.m. Monday, or anytime when there isn't a nurse or doctor on duty, the guards and first aid groups will follow first aid instructions and assist in getting the ill or injured person to a hospital or doctor.

6.5 Emergency Monitoring Equipment

The following is a list of emergency equipment that will be available for personnel and area monitoring as well as that for assessing the release of radioactive materials into the environment:

6.5.1. Model 22A Portable Scaler Rate Meter with Single Channel Analyzer

This equipment is to be used for immediate assessments of radioactive samples. It is portable and therefore convenient and practical for inplant and out of plant operations.

6.5.2 Eberline "Teletector Survey Monitor"

This equipment is to be used for assessing radiation and high radiation areas. Its detector can be extended approximately ten feet to allow emergency personnel to obtain accurate measurements while minimizing radiation exposures to themselves.

6.5.3 G.M. Portable Survey Meter

This equipment is to be used to detect low level external contamination when monitoring operating personnel.

6.5.4 Two (2) Victoreen and/or Eberline Survey Monitors

These equipment will be used for radiation survey measurements during a radiological emergency.

6.5.5 Packard Auto-Gamma Spectrometer

This equipment will be used for accurate analysis of air,

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s); and to import such byproduct and source material. This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

| | |
|--|---|
| <p>Licensee</p> <p>1. E. R. Squibb and Sons, Inc. Squibb Institute for Medical Research Georges Road 2 New Brunswick, New Jersey 08903</p> | <p>In accordance with application dated May 17, 1983</p> <p>3. License number 29-00139-02 is amended in its entirety to read as follows:</p> <hr/> <p>4. Expiration date March 31, 1989</p> <hr/> <p>5. Docket or Reference No.</p> |
|--|---|

| 6. Byproduct, source, and/or special nuclear material | 7. Chemical and/or physical form | 8. Maximum amount that licensee may possess at any one time under this license | | | | | | | | | | | | | | | | | | |
|--|--|---|------------|----------|------------|------------|------------|----------|---------------|---------------|-------------|----------|-----------|---------------|-------------|----------|----------------|-------------|----------------|--|
| <p>A. Any byproduct material with Atomic Nos. 3-83, inclusive, except Strontium 90</p> | <p>A. Any</p> | <p>A. 50 curies total, except as listed below:</p> <table style="margin-left: 20px;"> <tr><td>Hydrogen 3</td><td>5 curies</td></tr> <tr><td>Iodine I31</td><td>150 curies</td></tr> <tr><td>Iodine I25</td><td>5 curies</td></tr> <tr><td>Phosphorus 32</td><td>20 millicurie</td></tr> <tr><td>Chromium 51</td><td>2 curies</td></tr> <tr><td>Cobalt 60</td><td>50 millicurie</td></tr> <tr><td>Selenium 75</td><td>5 curies</td></tr> <tr><td>Molybdenum 99/</td><td>2000 curies</td></tr> <tr><td>Technetium 99m</td><td></td></tr> </table> <p>B. 15 millicuries per source</p> | Hydrogen 3 | 5 curies | Iodine I31 | 150 curies | Iodine I25 | 5 curies | Phosphorus 32 | 20 millicurie | Chromium 51 | 2 curies | Cobalt 60 | 50 millicurie | Selenium 75 | 5 curies | Molybdenum 99/ | 2000 curies | Technetium 99m | |
| Hydrogen 3 | 5 curies | | | | | | | | | | | | | | | | | | | |
| Iodine I31 | 150 curies | | | | | | | | | | | | | | | | | | | |
| Iodine I25 | 5 curies | | | | | | | | | | | | | | | | | | | |
| Phosphorus 32 | 20 millicurie | | | | | | | | | | | | | | | | | | | |
| Chromium 51 | 2 curies | | | | | | | | | | | | | | | | | | | |
| Cobalt 60 | 50 millicurie | | | | | | | | | | | | | | | | | | | |
| Selenium 75 | 5 curies | | | | | | | | | | | | | | | | | | | |
| Molybdenum 99/ | 2000 curies | | | | | | | | | | | | | | | | | | | |
| Technetium 99m | | | | | | | | | | | | | | | | | | | | |
| <p>B. Nickel 63</p> | <p>B. Plated sources contained in Hewlett Packard Model 19312 detector cells</p> | | | | | | | | | | | | | | | | | | | |

9. Authorized use
- A. Research and development as defined in 10 CFR Part 30 and processing for distribution to authorized recipients.
 - B. For use in gas chromatographs for sample analysis.

CONDITIONS

10. The licensed material shall be used at the licensee's facilities at Rt. 1, North Brunswick, New Jersey except radioimmunoassay kits may be demonstrated anywhere in the United States where the Nuclear Regulatory Commission maintains jurisdiction for regulating the use of byproduct material. In addition the following material may be used at the licensee's Lawrenceville, New Jersey facilities:

Dkt 8504260249

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CONDITIONS

10. continued

| Isotope | Form | Possession Limit |
|---------------|-------------------------------------|---------------------------|
| Hydrogen 3 | Any | 2000 millicuries |
| Carbon 14 | Any | 4000 millicuries |
| Phosphorus 32 | Any | 20 millicuries |
| Iodine 125 | Any | 200 millicuries |
| Sulfur 35 | Any | 2000 millicuries |
| Sodium 22 | Any | 5 millicuries |
| Calcium 45 | Any | 5 millicuries |
| Chromium 51 | Any | 100 millicuries |
| Chlorine 36 | Any | 300 microcuries |
| Strontium 85 | Any | 10 millicuries |
| Nickel 63 | Any | 10 millicuries |
| Curium 141 | Any | 10 millicuries |
| Scandium 46 | Any | 10 millicuries |
| Iodine 129 | Any | 2 millicuries |
| Nickel 63 | Plated sources in detector cells | 15 millicuries per source |

11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections" and Part 20, "Standards for Protection Against Radiation."
12. Licensed material shall be used by, or under the supervision of, individuals designated by the licensee's Radiation Safety Committee.
13. A. (1) Each sealed source acquired from another person and containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for contamination and/or leakage prior to use. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a sealed source received from another person shall not be put into use until tested.
- (2) Notwithstanding the periodic leak test required by this condition, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.

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CONDITIONS

13. continued

(3) Except for alpha sources, the periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.

- B. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to use or transfer as a sealed source. If the inspection or test reveals any construction defects or 0.005 microcurie or greater of contamination, the source shall not be used or transferred as a sealed source until it has been repaired, decontaminated and retested.
- C. Each sealed source containing licensed material, other than Hydrogen 3, with a half-life greater than thirty days and in any form other than gas shall be tested for leakage and/or contamination at intervals not to exceed six months except that each source designed for the purpose of emitting alpha particles shall be tested at intervals not to exceed three months.
- D. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- E. If the test required by Subsection A. or C. of this condition reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within five (5) days of the test with the U. S. Nuclear Regulatory Commission, Region I, 631 Park Avenue, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.

14. Sealed sources containing licensed material shall not be opened or removed from their respective source holders by the licensee.

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CONDITIONS

15. The licensee shall not use licensed material in or on human beings or in field applications where activity is released except as provided otherwise by specific condition of this license.
16. Experimental animals administered licensed materials or their products shall not be used for human consumption.
17. This license does not authorize the distribution of byproduct material for medical use under general license pursuant to Paragraph 35.31, 10 CFR 35.
18. This license does not authorize the commercial distribution of exempt quantities of licensed material pursuant to Section 30.18, 10 CFR 30, and Section 32.18, 10 CFR 32.
19. The licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Material for Transport and Transportation of Radioactive Material Under Certain Conditions."
20. A. Each chromatograph detector containing Nickel 63 shall be tested for leakage and/or contamination at intervals not to exceed six months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the transfer, a detector received from another person shall not be put into use until tested.
- B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the surfaces of the device in which the foil is mounted or stored on which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.
- C. If the test reveals the presence of 0.005 microcurie or more of removable contamination, the licensee shall immediately withdraw the foil from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Commission regulations. A report shall be filed within 5 days of the test with the U. S. Nuclear Regulatory Commission, Region I, 631 Park Avenue, King of Prussia, Pennsylvania 19406, describing the equipment involved, the test results, and the corrective action taken.
- D. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically authorized by the Commission or an Agreement State to perform such services.

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CONDITIONS

- 21. A. Detector cells containing titanium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 225 degrees Centigrade.
- B. Detector cells containing scandium tritide foil shall only be used in conjunction with a properly operating temperature control mechanism which prevents foil temperatures from exceeding 325 degrees Centigrade.
- 22. The licensee shall maintain, and execute the response measures of his Radiological Contingency Plan submitted to the Commission on June 29, 1981, as revised on December 4, 1981, March 17, 1982 and May 27, 1983. The licensee shall also maintain implementing procedures for his Radiological Contingency Plan as necessary to implement the Plan. The licensee shall make no change in his Radiological Contingency Plan that would decrease the response effectiveness of the Plan without prior Commission approval as evidenced by license amendment. The licensee may make changes to his Radiological Contingency Plan without prior Commission approval if the changes do not decrease the response effectiveness of the Plan. The licensee shall maintain records of changes that are made to the Plan without prior approval for a period of two years from the date of the change and shall furnish the Chief, Material Licensing Branch, Division of Fuel Cycle and Material Safety, NMSS, U.S. Nuclear Regulatory Commission, Washington, D. C. 20555, and the appropriate NRC Regional Office specified in Appendix D of 10 CFR Part 20, a report containing a description of each change within six months after the change is made. Radiation detection systems and alarms to continuously monitor effluent releases from all systems where materials at risk from disruptive events exceed the quantities listed in Enclosure 2 to the Order signed on February 11, 1981, shall be installed and operational by April 1, 1983.
- 23. Except as specifically provided otherwise by this license, the license shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in applications dated May 17, 1983,; and letters dated June 29, 1981, December 4, 1981, March 17, 1982, June 22, 1982, December 15, 1982, May 27, 1983, June 6, 1983, July 11, 1983, October 17, 1983, December 14, 1983 and February 17, 1984. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

By John M. M. [Signature]
 Material Licensing Branch
 Division of Fuel Cycle and
 Material Safety
 Washington, D. C. 20555

EX-103

Date