

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV/WCFO

Inspection Report: 3-90006/96-01

License: 04-00580-03 (Terminated)  
04-00580-07 (Terminated)

Former Licensee: Isotopes Specialties Company (ISC)

Inspections At: 703 S. Main Street  
Burbank, California 91506

170 W. Providencia Street  
Burbank, California 91502

Inspection Conducted: February 21 through 23, 1996

Inspector: H. Dean Chaney, Senior Radiation Specialist

Approved By: Frank A. Wenslawski 4/8/96  
Frank A. Wenslawski, Chief Date  
Materials Branch

Inspection Summary

Areas Inspected: This was a special inspection to determine whether the two facilities which the former Isotope Specialties Company had occupied were adequately decommissioned prior to vacating the premises and/or terminating the Atomic Energy Commission (AEC) license. The inspector conducted independent radiological surveys (fixed, loose, and general area) in the buildings and external areas where the former licensee's activities may have taken place. This inspection was part of an NRC project which evaluated approximately 16,000 retired licenses. An NRC contractor (Oak Ridge National Laboratories-ORNL) conducted evaluations of license files and made determinations as to the potential for a given site to contain residual radioactivity due to previously licensed activities. On the basis of the information in the retired license file for this site, such as type and quantity of authorized materials, and lack of adequate decommissioning documentation, ORNL concluded that these facilities had a high potential for containing residual radioactive contamination due to past licensed activities at the sites.

Results: The NRC inspector identified several anomalous gamma radiation levels above ambient background, in and around the above noted facilities, that were most likely due to previous AEC licensed activities conducted by Isotopes Specialties Company during the 1950's and early 1960's. Based upon the inspection findings, it was concluded that the buildings at both sites, and the outside area of one site, contain radioactive contamination above current NRC's residual radioactivity criteria for release of such facilities for unrestricted use.

9604 120023 38PP

Summary of Inspection Findings: No violations or deviations to NRC regulations were identified during the course of the inspection. However, the sites will require further radiological characterization and evaluation.

Attachments:

1. Persons Contacted and Exit Meeting
2. 703 S. Main Street Site Photographs
3. 170 W. Providencia Street Site Photographs
4. Radiological Survey Data and Site Diagrams

## DETAILS

### 1 BACKGROUND

During the Oak Ridge National Laboratory review of these docket files, ORNL could not discern suitable information on the degree of cleanup accomplished, survey reports, etc., to be assured that the subject sites met current decommissioning criteria, or that a final AEC/NRC inspection had been performed at the sites prior to license termination. They were also concerned that there may have been onsite burial/disposal of radioactive material or abandonment of manufacturing equipment/material in place. All other previous ISC licenses reviewed by ORNL did not raise concerns, since they were either superseded by other licenses, or the material authorized did not warrant a serious contamination concern.

NRC/AEC records (docket files for several of the ISC/U.S. Nuclear Corp. licenses) and interviews with a former employee provided the following information.

The S. Main Street facility was used for a myriad of radioactive material research, source manufacture, and waste storage activities during the 1950's and early 1960's. All forms of radioactive materials were used at the facility. Kilocurie quantities of long lived radioisotopes in loose form were authorized for use at the facilities. Both sites were contaminated during use, but were supposedly decontaminated prior to vacating them.

ISC occupied the S. Main Street facility since the early 1950's and moved to the 170 W. Providencia Street facility in 1959 or 1960. In 1960 ISC was renamed Nuclear Corporation of American-Isotopes Specialties Company (NCA-ISC) and the AEC issued a source material license (C-05352) to NCA-ISC. The address on this license was listed as 170 W. Providencia Street. Subsequently, the 170 W. Providencia facility was sold to the U.S. Nuclear Corporation in early 1961 (U.S. Nuclear Corporation was created by some former employees of ISC). Records indicate that the 703 S. Main Street facility was used by NCA-ISC following transfer of operations to the 170 W. Providencia Street facility. NCA-ISC hired U.S. Nuclear Corporation to survey and decontaminate the 170 W. Providencia Street facility prior to it being sold by a Mr. Elwood Richardson to the current owner (Joseph A Thomson) in 1966. In the mid-1960's, U.S. Nuclear started a source manufacturing operation at 801 N. Lake Street, Burbank, California (within a few blocks of both the 703 S. Main Street and 170 W. Providencia Street facilities). U.S. Nuclear was eventually acquired by International Chemical and Nuclear Corporation (ICN) in December 1966, and operated as a wholly owned subsidiary of ICN. It is not known what happened to NCA-ISC.

Both the 703 S. Main Street and 170 W. Providencia Street sites used radioactive materials under several AEC licenses that dated back to the 1950's and involved the above mentioned companies. Licenses were for radioactive waste collection and storage, waste consolidation for ocean dumping, radioactive source manufacture, and a commercial radiochemical laboratory.

Kilocurie quantities of various long lived radioisotopes were authorized, in both loose and sealed form.

AEC Byproduct Licenses:

License Nos. 04-00580-01, 04-00580-02, 04-00580-03, 04-00580-04, 04-00580-05 and 04-00580-07 (Docket Nos. unknown).

Amendment No. 3 (December 1957) to byproduct license 04-00580-03 added the 170 W. Providencia Street facility as a location for use of radioactive materials under the license. This facility was procured on or about June 1957 by ISC.

The docket file contained an April 13, 1982, memorandum from the California Department of Health Services (D. Honey to D. Nussbaumer (NRC)), which states that the 703 S. Main Street facility was surveyed and decontaminated prior to ISC moving to the Providencia Street address.

Based on the ORNL expert review of licenses 04-00580-03 and 04-00580-07, ORNL assigned the 703 S. Main Street facility a numerical score of 1,493 and the 170 W. Providencia Street facility a numerical score of 7,568. Current NRC inspection criteria requires that any previously terminated license with an ORNL review score above 300 be evaluated as soon as possible.

AEC Source Licenses:

License Nos. C-03544 (40-00858) and C-05352 (40-00858).

NRC archived docket files disclosed that a company named "Research Chemicals, Inc." was issued a source material license C-04013 (40-02370) in the mid to late 1950's for normal thorium at less than 0.25 percent thorium by weight. The license was to expire on March 31, 1959. The docket file for this license indicated that thorium was commonly disposed of via the local sanitary sewer system. This company was listed in other docket files as being an affiliate of ISC. The authorized use location was given as the 170 W. Providencia Street address.

## 2 CURRENT STATUS OF THE SITES

### 703 S. Main Street

The facility is currently being used as a production bakery and bakery product distribution facility, employing 10-12 workers. The current building ownership is the Viktor Bene's Bakeries and Distribution Company. Site contact is Ugo Mamolo, President.

Mr. Mamolo indicated that their company has occupied the building for the last seven to eight years, and before that time it was used by a food additive business. Mr. Mamolo had no knowledge of ISC or the fact that radioactive materials had been used in the facility prior to Viktor Bene's Bakeries



ownership. Mr. Mamolo indicated they had modified the building some since occupying it.

A document search of the State of California, Radiologic Health Branch files failed to produce documents/information concerning this site and ISC.

170 W. Providencia Street

The facility is currently being renovated by a former tenant (Fiber Resin Corp.). The current building owner is:

Joseph A. Thomson  
831 Foothill Drive  
Glendale, California 91201

Mr. Thomson indicated that he has owned the property since the mid 1960's and had been aware that some company had used radioactive materials at the site before his ownership, but understood that all radioactive materials had been removed. Mr. Thomson indicated that the buildings on the site had only been slightly modified since his ownership, mostly interior walls for offices. Some small outside buildings had been added. Mr. Thomson indicated that one of his employee's (R. Fuller) had previously worked for U.S. Nuclear as a chemist. Most of Mr. Thomson's information about earlier radioactive material work on his property was gained through conversations with Mr. Fuller.

One small work area in the old warehouse building at the site is still occupied by a company subleasing its work space from the Fiber Resin Corporation. Approximately three to four workers are located in the Bay "B" area of the site. The company (Multisales Vac Tech, Corp) contact is Walt Brandler.

A document search of the State of California, Radiologic Health Branch files failed to produce documents/information concerning this site or ISC.

### 3 INDEPENDENT RADIOLOGICAL MEASUREMENTS

The NRC inspector conducted cursory radiological surveys of the floor and lower walls of site buildings, and exterior areas, where available. The exterior and interior of the buildings and site proper were photographed (Attachments 2 and 3).

At the 703 S. Main Street site only 40 percent of the floor surface was available for surveying, due to processing equipment and stored commodities. Approximately 90 percent of this surface area was surveyed. The exterior and roof of the building were also surveyed. The building has been expanded to the property lines around the perimeter of the building.

At the 170 W. Providencia Street site, approximately 95 percent of the floor surfaces in the two major structures on the site were available for surveying. Approximately 90 percent of this surface area was surveyed. The roof and

exposed ventilation penetrations of the main structure were also surveyed. Open areas adjacent to adjoining buildings were surveyed.

Where possible, the interior of walls, door sills, wall baseboards, cracks in the flooring, floor drains, exterior industrial drains, and external ground areas were carefully surveyed.

Residual contamination surveys were performed with portable radiological survey meters equipped with gamma scintillation or beta-gamma Geiger-Mueller type detectors. A portable gamma scintillation exposure rate measurement instrument was used to verify ambient gamma radiation levels ( $\mu\text{R/h}$ ). A large area (100 square centimeter) air proportional alpha survey instrument was used for spot alpha activity measurements. Prior to the surveys, the instruments were checked for accuracy and consistency with dedicated and traceable check sources. Background count rates and exposure rates were determined in the local area where it was not expected to have been affected by former licensed activities. The instruments used were in current calibration.

The local area gamma radiation background was established as  $10 \mu\text{R/h}$ . The readings noted in the narrative below do not have background values subtracted from them and are gross readings. Current NRC policy requires that structures be considered contaminated above release limits if the ambient gamma exposure rate (that amount above background), when measured at 1 meter height from a surface, is greater than  $5 \mu\text{R/h}$  and  $10 \mu\text{R/h}$  for soils.

#### 703 S. Main Street Site

Five widely separated areas of elevated gamma radiation levels were identified. Possibly contaminated areas are relatively small in size and range from 1 square meter to several square meters. Survey results and site diagram (Figure 1) are located in Attachment 4 to this report.

General area exposure rate surveys of areas within and outside of the building ranged from a low of  $9 \mu\text{R/h}$  outside to a high of  $60 \mu\text{R/h}$  inside the building. Several smear samples, for determining loose radioactivity levels, were obtained from areas within the building exhibiting elevated gamma radiation levels. The smears were field counted using the portable alpha and beta-gamma detection instruments. The smear samples were later counted using laboratory type alpha and beta-gamma scaler type instruments. No loose radioactivity above instrument detection capabilities was detected on any of the smear samples. Direct surface beta-gamma activity surveys were performed in areas exhibiting elevated gamma radiation readings. Elevated beta radiation was indicated in all but one of the areas (Freezer #2 area) exhibiting elevated gamma exposure rate measurements. The Freezer #2 area appeared to have been covered with ceramic tile not found in other parts of the building. The ceramic tiles were verified to be free of significant natural radioactivity.

All of the five areas identified are located in walking/traffic areas of the building and not below any employee's assigned work position/table/desk.

#### 170 W. Providencia Street

Twelve areas (seven inside of site structures and five in outside areas) exhibited elevated gamma radiation levels. Areas ranged in size from .3 square meters to tens of square meters. Subfloor contamination is suspected in several areas. Survey results and site diagram (Figure 2) are located in Attachment 4 to this report.

General area exposure rate surveys of areas within and outside of the two site buildings ranged from 11 to 80  $\mu\text{R/h}$  on the outside (east side) of the primary building, and 10 to 22  $\mu\text{R/h}$  inside of the primary building. The old waste storage area (Bays) had one area (Bay "B") that exhibited a general area gamma radiation level of 24  $\mu\text{R/h}$ . The area within Bay "B" appears to be a capped pipe/tube. Several smear samples, for determining loose radioactivity levels, were obtained from all twelve areas showing elevated gamma radiation levels. The smears were field counted using the portable alpha and beta-gamma detection instruments. The smear samples were later counted using laboratory type alpha and beta-gamma scaler type instruments. No loose alpha or beta radioactivity above NRC release criteria was identified. Direct surface alpha and beta-gamma activity surveys were performed in areas exhibiting elevated gamma radiation readings. Fixed beta radiation above ambient background levels (50 cpm/100  $\text{cm}^2$ ) was indicated in all areas exhibiting elevated gamma exposure rate measurements. Two areas showed elevated surface alpha activity (fixed).

#### **4 STATE OF CALIFORNIA CONFIRMATORY SURVEY RESULTS**

On February 23, 1996, Mr. Paul Baldenweg, a California Department of Health Services Radiologic Health Branch inspector, performed confirmatory gamma, beta-gamma, and alpha exposure rate measurements at both sites. All of the areas identified by the NRC inspector were confirmed to be exhibiting elevated gamma, alpha, and beta-gamma radiation levels.

During the February 23, 1996, confirmatory survey the inspectors discovered that a portion of Bay "B" was occupied by three workers employed by the Multisales Vac [Vacuum] Tech [Technologies] Corp. This company was subleasing a small work space from Fiber Resin Corp. The area of elevated gamma radiation was in a corner (northwest) of the work area that was not permanently occupied by any worker. Gamma exposure rate measurements were made at employee's work benches and desks. Gamma exposure rates at these locations were found to be at or below background levels.

The State inspector performed in situ gamma spectrometry analyses on four areas at the 170 W. Providencia Street site (three inside the main structure, one in an outside area, and one in Bay "B") of the old waste storage building. The Bay "B" gamma spec analysis revealed the presence of uranium/thorium and/or its decay products, as did one area in the main structure. Other areas where in situ gamma spectrometry was performed showed cesium-137 contamination.

A concrete sample was obtained from a spot in the northeast corner (contaminated area #1) of the main structure and was submitted for laboratory analysis by the State of California laboratory in Berkeley, California. The results of this sample, dated March 1, 1996 (Carolyn T. Wong, RHB), indicate that cesium-137, thorium-230 and 232, uranium-238, and radium-226 were present. Several of the isotopes mentioned were in concentrations above current NRC release criteria for soils/solids. The above documented results are included as an enclosure to Attachment 4 to this report.

## 5 CONCLUSIONS

The independent radiation measurements and the state's confirmatory measurements showed that both sites possess residual radioactivity above NRC release criteria, due to previously licensed activities.

## ATTACHMENT 1

### 1 PERSONS CONTACTED

Paul Baldenweg, Sr. Health Physicist, State of California

#### 703 S. Main Street Site

Ugo Mamolo, President Viktor Bene's Bakeries  
Manijeh Tabatabai, Bookkeeper Viktor Bene's Bakeries  
Irene Alejio, Bookkeeper, Viktor Bene's Bakeries

#### 170 S. Providencia Street Site

Joseph A. Thomson, Owner  
Armando Silles, Multisales Vacuum Tech, Corp.  
Heriberto Amaya, Multisales Vacuum Tech, Corp.  
Kevin Sorensen, Multisales Vac Tech, Corp.  
Walt Brandler, President Multisales Vac Tech, Corp.

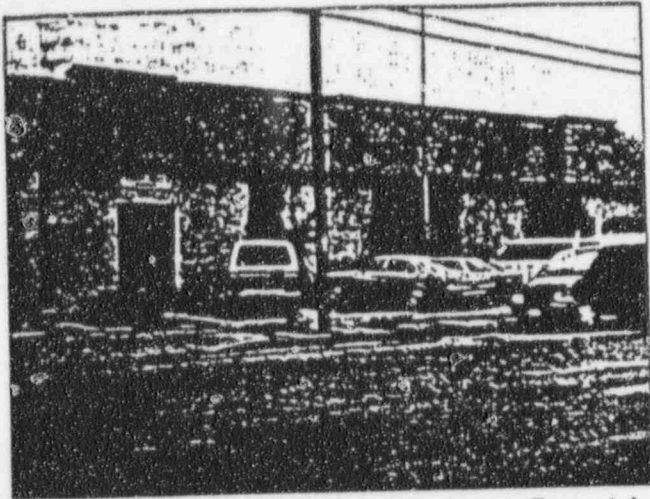
### 2 EXIT MEETING

On February 21 and 23, 1996, the inspector discussed the scope and findings of the inspection with Mr. Mamolo and Mr. Thomson, respectively.

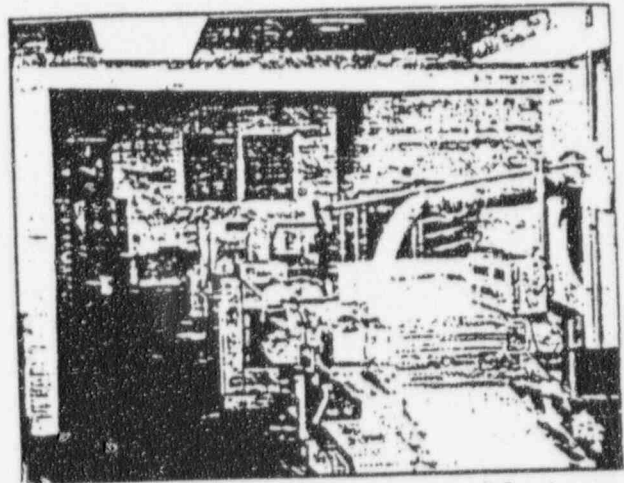
On February 23, 1996, during Mr. Paul Baldenweg's confirmatory measurement survey, Ms. Tabatabai and Alejio at the Bene's Viktor Bakery, were notified of the inspection findings and that the residual radioactivity appears to be firmly fixed in place and does not pose an immediate health hazard to workers or their product.

On February 23 and 24, 1996, Messrs. Thomson, Brandler, Sorensen, Amaya, and Silles were informed similarly about the significance of the radiological contamination found at the 170 W. Providencia Street site, and especially the area in Bay "B" of the site.

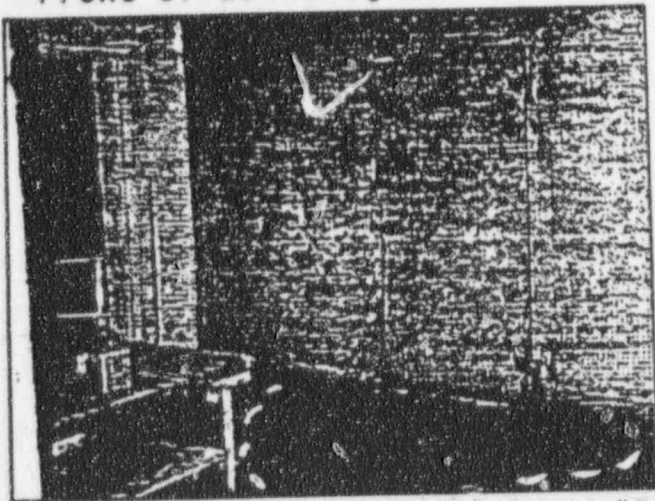




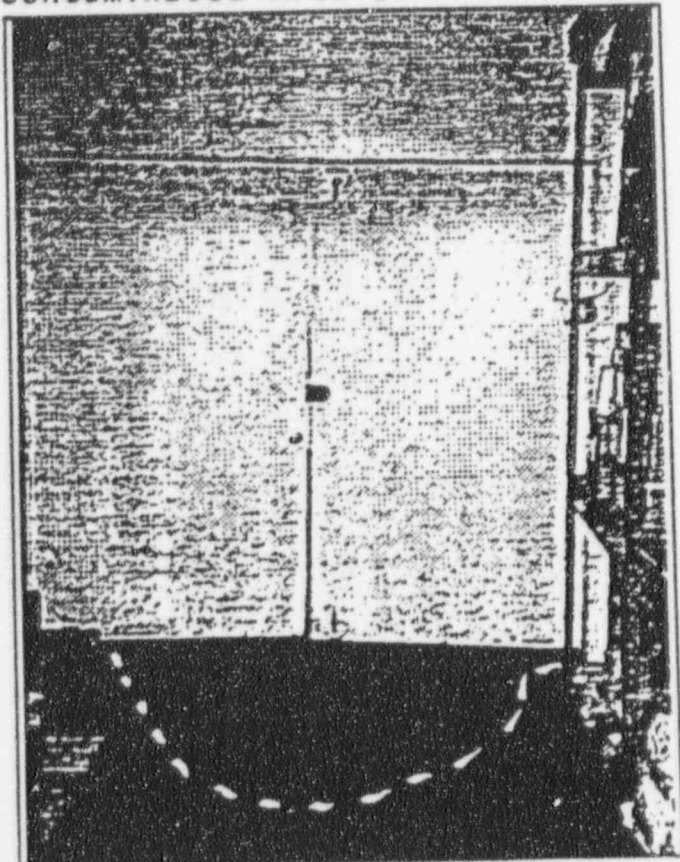
Front of Building (False Front)



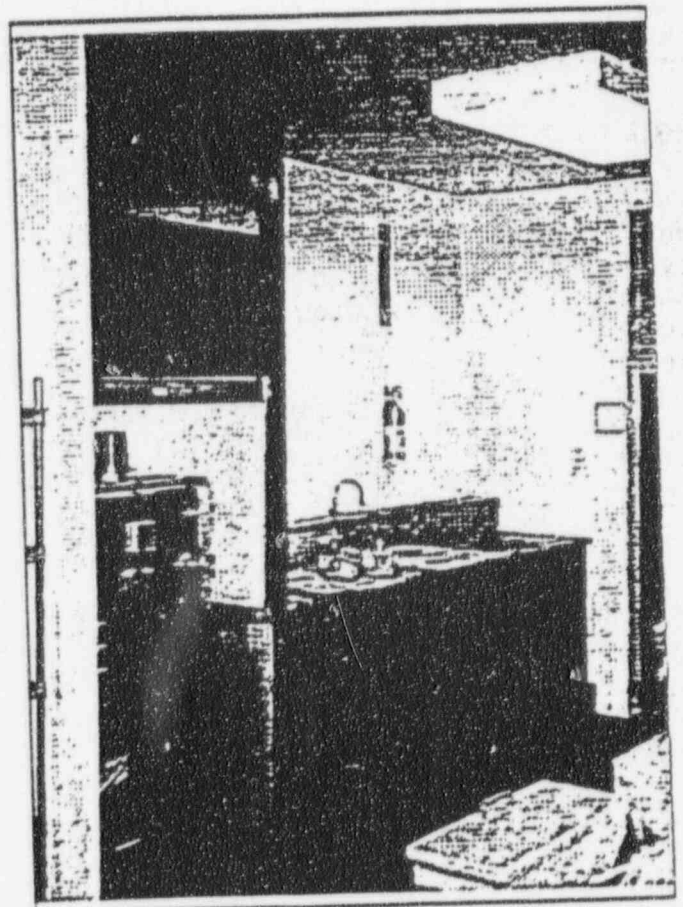
Old Laboratory & Hot Cell Area



Contaminated Area #1 Freezer #2

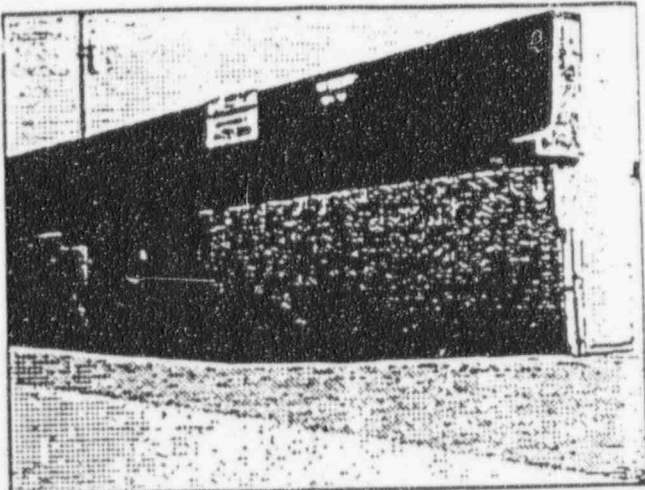


Contaminated Area #3

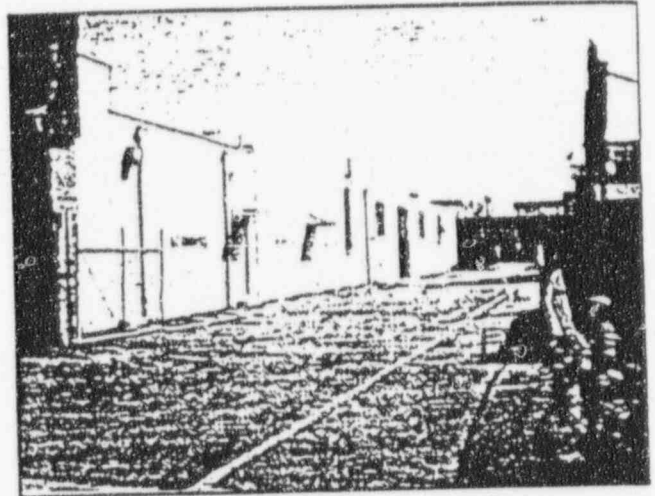


Old Lab Fume Hood & Bench

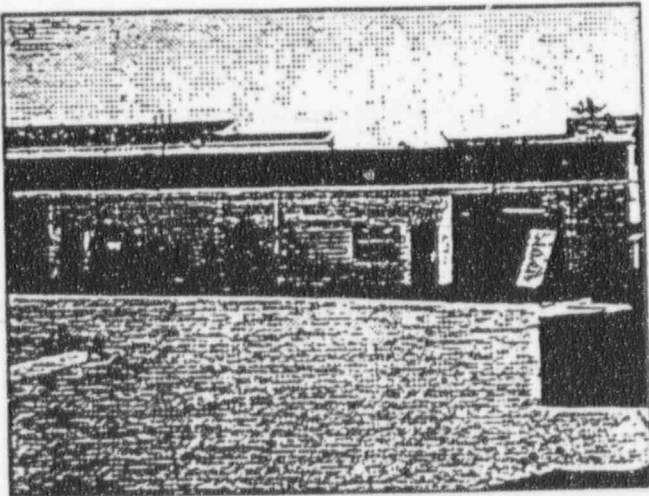
Viktor Bene's Bakery  
703 South Main Street  
Burbank, CA



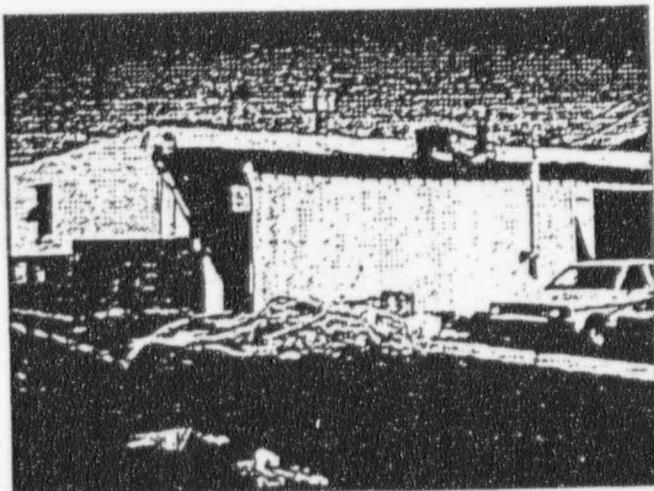
Front of Building



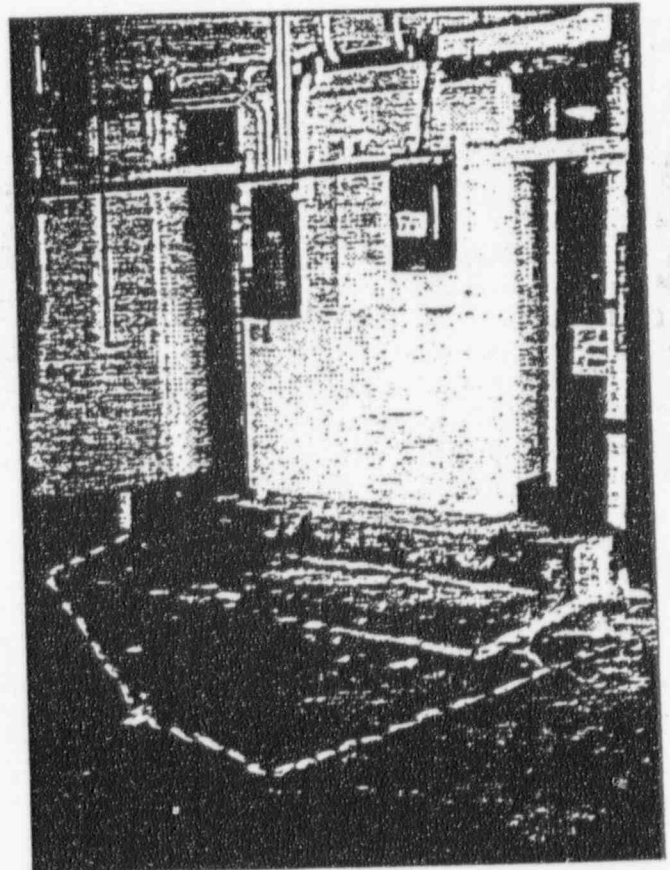
Right Side Driveway to Rear



Rear of Property - Old Storage House & Bay "B"



Rear of Bldg - Contam. Area #11 under Dumpster



Inside Bldg Contam. Area #1

Former Isotopes Specialities  
Property  
170 West Providencia Street  
Burbank, CA

ATTACHMENT 4

NRC INSPECTION REPORT 30-90006/96-01

SURVEY DATA AND SITE SURVEY DIAGRAMS

ISOTOPE SPECIALTIES COMPANY SITES  
BURBANK, CALIFORNIA

A. INSTRUMENTS USED AND SURVEY METHODOLOGY

<u>MODEL</u>	<u>NRC SERIAL #</u>	<u>CALIBRATION DUE</u>
Ludlum Model 3 (w/44-3, 44-6, & 44-9 probes)	035644	6/21/96
Eberline Model 7 (PRM-7)	010839	8/14/96
LBL Air Proportional Detector	502898	8/14/96
Eberline ESP-1 (W/HP-210 probe)	017656	6/10/96
Eberline SAC-4 Alpha Scintillator	008979	12/13/96

Instruments/detectors were response tested daily and also following each day's surveys. Response check sources used were traceable to an NIST calibration record:

- cesium 137
- technetium 99
- thorium 230

The Ludlum Model 3 rate meter was coupled to a low energy gamma radiation sensitive 3.9 centimeter (cm) diameter thin crystal scintillation detector (Model 44-3). The detector was moved over the surfaces (3-6 cm per second) being investigated at a height of approximately 1-2 centimeters. Randomly, the meter was placed in contact with the surface until the meter reading stabilized (10-20 seconds). An "S" pattern was utilized in scanning the facility. Areas exhibiting elevated gamma readings were further scanned and contact surveyed with the thin window beta-gamma pancake probe (44-9) and the LBL air proportional alpha probe (193 cm<sup>2</sup> surface area).

The Eberline PRM-7 (with an internal gamma scintillation detector) was held above the walking surfaces at approximately 3 feet. Readings were taken/logged after the meter stabilized (10-15 seconds). This instrument's readings were modified by use of a calibration factor.

Loose radioactivity smears were analyzed using the ESP-1 coupled to a shielded HP-210T probe and/or the SAC-4 alpha counter. Both instruments were used in the scaler mode of counting.

Background Determinations

Instrument response to ambient radiation background was established in adjacent areas and on surfaces not expected to have been affected by the previous licensee's activities.



General area gamma exposure rate (PRM-7): 9-10 microRoentgens per hour ( $\mu$ R/h).

Fixed alpha surface activity (LBL-AAP): zero alpha counts (minimum observable alpha count was estimated to be 20 cpm)

Fixed beta-gamma activity (GM HP-210T): 40-50 cpm

Surface and air gamma scintillation activity (Ludlum Model 44-3): 600-700 cpm

#### Counting Equipment Statistics

Portable rate meter/scaler radiation detection instruments were found to have the following minimum detectable activity (MDA) capabilities:

- Ludlum 3 with Model 44-9 (GM pancake probe) = 4,900 dpm/100 cm<sup>2</sup> when used in the surface scanning mode.
- Ludlum 3 with Model 44-9 (GM pancake probe) = 1,765 dpm/100 cm<sup>2</sup> when used in the fixed position surface monitoring mode.
- ESP-1 with HP-210T (shielded GM pancake probe) = 100 dpm/100 cm<sup>2</sup> when used in the scaler mode with a two minute count time, in the fixed position surface monitoring mode.
- LBL Air Proportional Alpha rate meter = 23 dpm/100 cm<sup>2</sup>

Smear counting instruments were found to have the following MDA capabilities:

- ESP-1 (w/HP-210 probe) = 98 dpm/100 cm<sup>2</sup> (Tc-99 beta)
- SAC-4 (alpha) = 15 dpm/100 cm<sup>2</sup> (Th-230 equivalent)

MDAs were calculated using the methodologies contained in Section 5 to NUREG/CR-5849.

#### Residual Radioactive Contamination Criteria Used

Due to the previous licensee's use of alpha, beta, and beta-gamma isotopes in the facility, the following residual contamination limits from NRC Policy and Guidance Directive FC 83-23 were used during this survey:

##### Unknown Beta-Gamma Emitters:

###### Total Activity

(Fixed & Removable Surface Activity)

5,000 dpm/100 cm<sup>2</sup>, averaged over 1 m<sup>2</sup>  
15,000 dpm/100 cm<sup>2</sup>, maximum in 100 cm<sup>2</sup>

###### Removable Activity

1,000 dpm/100 cm<sup>2</sup>

Unknown Alpha & Pure Beta Emitters:

Total Activity

(Fixed & Removable Surface Activity)

1,000 dpm/100 cm<sup>2</sup>, averaged over 1 m<sup>2</sup>  
3,000 dpm/100 cm<sup>2</sup>, maximum in 100 cm<sup>2</sup>

Removable Activity

200 dpm/100 cm<sup>2</sup>

General Area Gamma Exposure Rate:

Less than 5.0  $\mu$ R/h above background, when measured at approximately 1 meter (~3 feet) above surfaces/floors of structures, and less than 10  $\mu$ R/h above background, when measured at approximately 1 meter above the ground for soils and lands.

**B SURVEY RESULTS**

703 S. Main Street

Dates of Surveys: February 21 and 23, 1996

Location of Survey: Viktor Bene's Bakery  
703 South Main Street  
Burbank, California 91506

Surveyor: H. Dean Chaney, US NRC, Region IV/WCFO

The building's floor space was covered with machinery and baking material/finished products over 60 percent of the floor space. Approximately 90 percent of the available open area was surveyed. The building's exterior abutted the property line of the lot.

- Five areas within the facility exhibited elevated gamma radiation levels (1.5-6 kcpm above background on contact with surfaces) and with ambient gamma exposure rates between 10 and 50  $\mu$ R/h above background levels. Elevated beta-gamma radiation levels were identified in four of the five areas.
- No removable alpha or beta-gamma activity was detected.
- No surface alpha activity was detected.
- No in situ determinations of specific isotopes present was attempted.
- No solid samples from the contaminated areas were collected.

The attached survey diagram (Figure 1) depicts the five areas of the facility exhibiting elevated gamma radiation levels. The area in front and within Freezer #2 was covered with relatively new ceramic tile. The other four areas showing elevated gamma readings were on original facility surfaces (concrete floors).



170 W. Providencia Street

Dates of Surveys: February 22 and 23, 1996

Location of Survey: 170 W. Providencia Street  
Burbank, California 91502

Surveyor: H. Dean Chaney, US NRC, Region IV/WCFO

The building's floor spaces were mostly uncovered (except for office spaces) and the facility was unoccupied. The former tenant (Fiber Resin Corporation) has recently moved to a new location and the workers present had been hired to clean up the site and repair damaged structures (walls, doors, electrical outlets, etc.). Approximately 90 percent of the available open area was surveyed. The site is composed of one large main structure and another smaller structure (old warehouse). An open area exist between the two structures (parking area).

Twelve separate areas on the site exhibited elevated gamma, alpha, and beta radiation levels.

- Six small areas (0.5 - 3 square meters in area) within the primary building exhibited elevated gamma radiation levels (1.5-7 kcpm above background on contact with the surface and 6-22  $\mu$ R/h general area above background). One of these areas exhibited elevated fixed alpha radiation levels (3 kdp/100cm<sup>2</sup>) and loose alpha activity (100 dpm/100 cm<sup>2</sup>). The loose alpha activity was detected upon counting the smear on a laboratory counter. Field measurements of the smear did not detect any significant alpha activity.

The State of California inspector confirmed the anomalous radiation readings identified and performed in situ gamma spectrometry on three areas. Thorium 230 and cesium-137 were identified during the analysis.

- Five large areas in the paved parking area between the old warehouse and the main structure exhibited elevated gamma radiation levels (1.5 to 3.5 kcpm above background on contact with the surface, with ambient general area gamma exposure rates of between 14 to 70  $\mu$ R/h above background).

The State of California inspector confirmed the anomalous radiation readings identified by the NRC and perform in situ gamma spectrometry of 1 area in the parking lot. Cesium-137 was identified during the analysis.

- One small area (thought to be a plugged pipe/well) in Bay "B" of the old warehouse exhibited elevated gamma and alpha radiation levels (14  $\mu$ R/h above background general area and 1,000 dpm/100 cm<sup>2</sup> alpha on contact with surface).

The State of California inspector confirmed the anomalous radiation readings identified by the NRC and perform in situ gamma spectrometry of the area in Bay "B". Thorium-230 was identified during the analysis.

The attached survey diagram (Figure 2) depicts the twelve areas at the site exhibiting elevated gamma radiation levels. The areas numbered #1 and #12 are

the ones that exhibited thorium contamination (alpha radiation). All areas are painted concrete surfaces with industrial debris/grease embedded.

A concrete sample was obtained from area #1 and sent to the State of California laboratory in Berkeley, California for analysis. The results (Figures 3 and 4) of this analysis showed the following contaminants were present and in the following concentrations:

<u>ISOTOPE</u>	<u>CONCENTRATION (pCi/gram)</u>
Cs-137	14.6
Ra-226	30.1*
Th-230	3,507*
Th-232/Th-228	317.2*
U-238/Th-234	37.8*
U-235	12.6

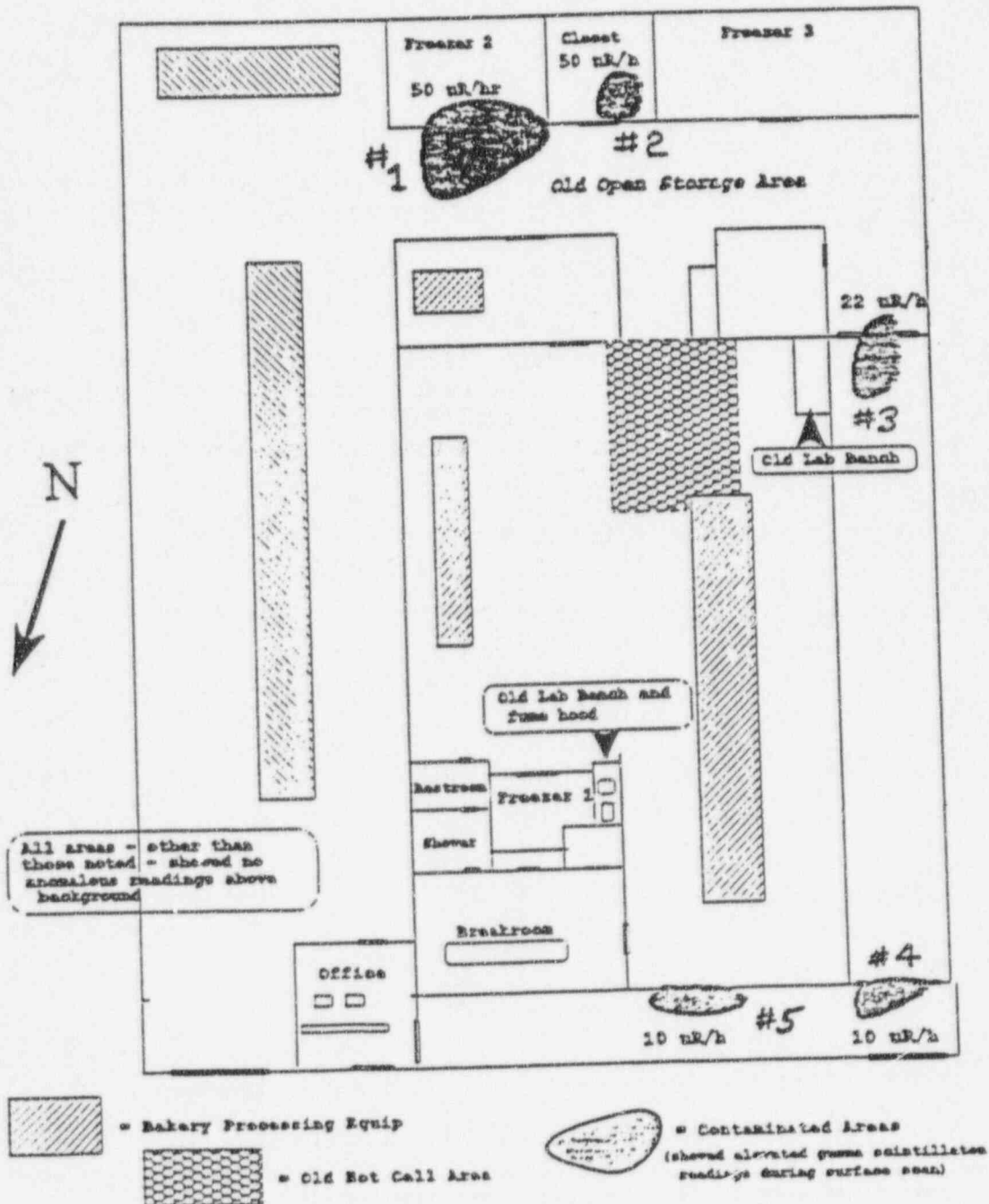
\* Radioisotopes are at concentrations above current NRC release criteria for solid and soils.

Area #1 (exhibited elevated loose alpha activity) was resurveyed with a large area smear (0.25 square meters) and carefully frisked with the large area portable alpha counter. Only a few counts above background were noted. Several piles of floor sweepings were also surveyed and no anomalous readings (alpha or beta-gamma) were noted.

Figure 1  
(Attachment 4)

RADIOLOGICAL SURVEY DIAGRAM  
NRC Report 30-90006/P6-C1  
Surveyed: 2/21 & 23/86

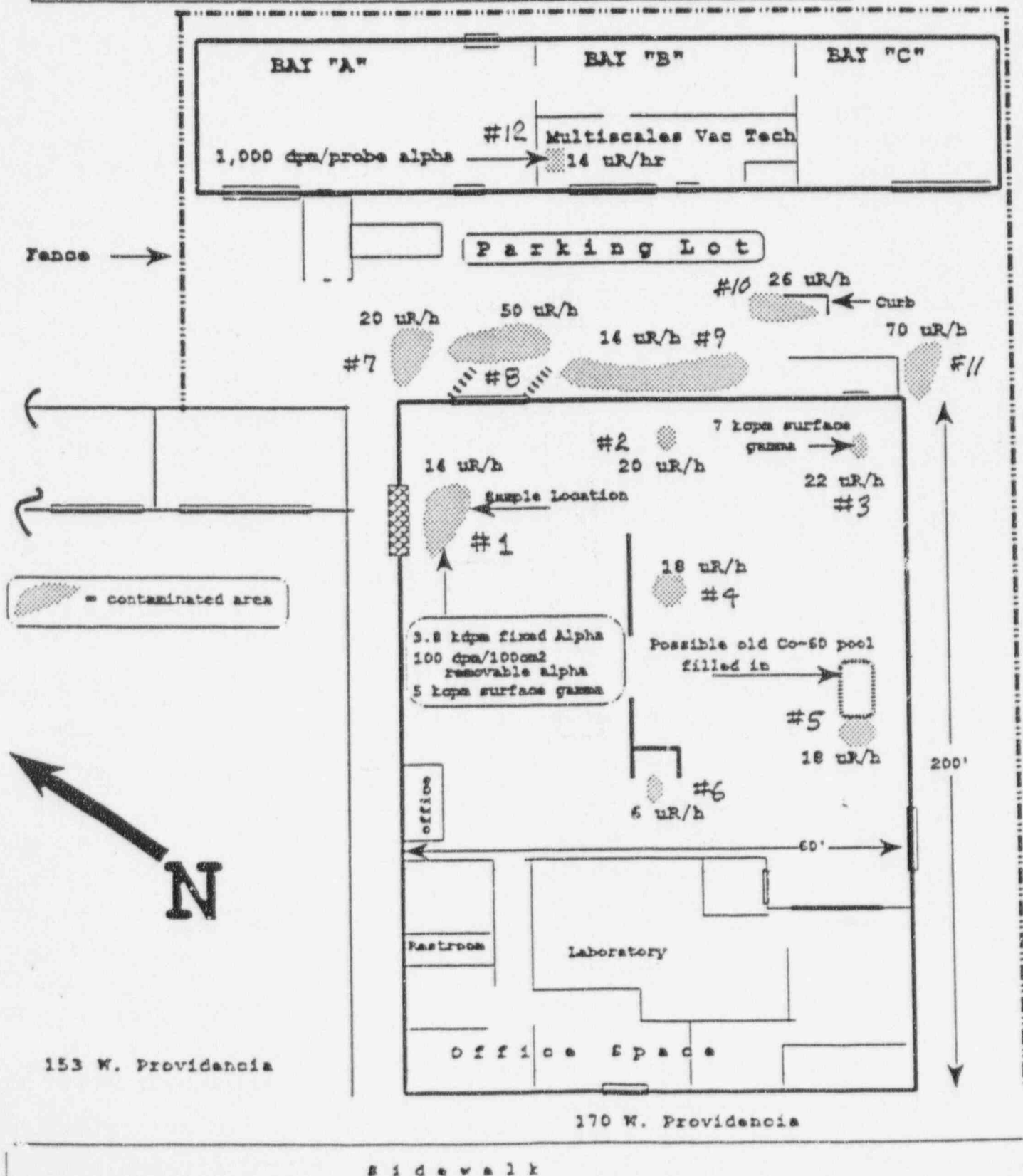
VICTOR REBE's BAKERY  
703 S. Main Street  
Wurbank, California



uR/h readings are net gamma exposure rate above background (Bkgrd = 10 uR/h)

ISOTOPE SPECIALITIES COMPANY  
 170 WEST PROVIDENCIA STREET  
 BUREAU, CALIFORNIA

uR/h readings are net exposure rate above background (Bkdy=10 uR/h)



State of California

Department of Health Services

MEMORANDUM

Date: March 1, 1996  
To: Paul P. Balderweg  
Radiologic Health Branch  
From: Carolyn T. Wong, C9W  
Sanitation & Radiation Laboratories Branch  
Subject: Results for Isotope Specialties Co. Inc.

Attached are the results for the "concrete chips" sample collected at Isotope Specialties Co. Inc. on February 23, 1996. The total sample was transferred to a rare earth counting planchet, a net weight of the sample determined, and the sample was analyzed for gamma emitting radionuclides on an intrinsic germanium detector. The results indicate the presence of uranium-238 and its daughters (Th-234, Pa-234), thorium-230, radium-226 and its daughters (Pb-214, Bi-214, Po-214), thorium-232 and its daughters (Ac-228, Th-228, Pb-212, Bi-212, Tl-208), uranium-235, cesium-137, and potassium-40. The daughter products are in secular equilibrium with the parent radionuclides and are not included in the accompanying report.

The following should be noted:

1. If the sample were from natural sources, one would expect the uranium-238, thorium-230, and radium-226 to be in secular equilibrium, and the activities of each of these radionuclides would be approximately equal. While this is true for uranium-238 and radium-226, the thorium-230 results are approximately 100 times the uranium-238 and radium-226 results.

The thorium-230 result is based on the 68 keV gamma photon. Since thorium-230 emits only a single gamma photon it is not possible to confirm the presence of this radionuclide. Additionally, the abundance for this gamma photon is only 0.37% which introduces a large variability in the results.

2. In natural uranium the activity ratio of uranium-238 to uranium-235 is approximately 20 to 1. For this sample the activity ratio is approximately 3 to 1 indicating the presence of enriched uranium.
3. Cesium-137 is not naturally occurring. Although cesium-137 is present in the environment due to fallout from atmospheric weapons testing, and the Chernobyl incident, the typical concentrations in soil samples are less than 1 pCi/g. The reported result appears to be due to contamination.
4. Potassium-40 is naturally occurring and is reported as a reference for comparison of interlaboratory split analyses.

If there are any further questions regarding these results please call me at 510-540-2209.

cc: Donald E. Burn, RHB  
S. Kusum Perera, Ph.D., SRLB



Figure 4  
(Attachment 4)

<b>RADIOCHEMICAL ANALYSIS REPORT</b> State of California-Department of Health Services Sanitation & Radiation Laboratory 2151 Berkeley Way Berkeley, CA 94704		Date & Time Sampled February 23, 1996 13:00	Serial No. R 71476
Collector's Name: Paul P. Baldenweg  Agency Address: Radiologic Health Branch 1449 W. Temple St., Room 206 Los Angeles, CA 90026  Phone No.: 213-580-5790		Date Received February 27, 1996	Lab No. 9836-96
Sampling Point: Isotopes Specialties Co. Inc. Location of Sample(s): 170 W. Providencia, Burbank, CA. System No. (GDW):		Send Report To: Paul P. Baldenweg  Agency Address: Radiologic Health Branch 1449 W. Temple St., Room 206 Los Angeles, CA 90026  Phone No.: 213-580-5790	
Type of Sample <input type="checkbox"/> Air Filter: _____ Finishing: _____ Starting: _____ Net (M <sup>2</sup> ): _____ <input type="checkbox"/> Air Charcoal Cartridge <input type="checkbox"/> Radon Canister		<input checked="" type="checkbox"/> Drinking Water <input type="checkbox"/> Sewage/Sludge <input type="checkbox"/> Milk <input type="checkbox"/> Groundwater <input type="checkbox"/> Sewage/Effluent <input type="checkbox"/> Fish/Shellfish <input type="checkbox"/> Surface Water <input type="checkbox"/> Soil/Sediment <input type="checkbox"/> NPP Inflow/Outflow <input type="checkbox"/> Sea Water <input type="checkbox"/> Vegetation <input type="checkbox"/> Scoword <input type="checkbox"/> Rain/Snow <input type="checkbox"/> Wipes <input type="checkbox"/> Composites <input checked="" type="checkbox"/> Other (Specify): Concrete Chips	

The analyses were performed using the standard methods. Precision criteria for these methods were determined to be acceptable.

R. No./URL No.	Sample Identification	Analysis	Results ± CE <sup>1</sup>	MDA <sub>95</sub> <sup>2</sup>	Units
71476/9836		K-40 <sup>3</sup>	57.3 ± 9.2	6.1	pCi/g
		Cs-137 <sup>3</sup>	14.56 ± 1.06	0.83	pCi/g
		Ra-226 <sup>3</sup>	30.1 ± 2.2	1.4	pCi/g
		Tb-230 <sup>3</sup>	3507 ± 265	232	pCi/g
		Tb-232/Tb-228 <sup>3</sup>	317.2 ± 2.9	1.1	pCi/g
		U-238/Tb-234 <sup>3</sup>	37.8 ± 20.7	25.2	pCi/g
		U-235 <sup>3</sup>	12.6 ± 3.9	3.9	pCi/g

1. Results less than the Minimum Detectable Activity (MDA) are reported as not Detected (N.D.).

2. CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-800/4-80-012, August 1980.

3. MDA<sub>95</sub> is the sample specific minimum detectable activity at the 95% confidence level, which is the LLD<sub>95</sub> divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD<sub>95</sub> is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 18th ed., 1992, where L is the square root of the instrument background count rate.

4. EASL-300, 2nd Ed., Vol. 1, Rev. 2/92, Method 4.5.2.3, Environmental Measurements Laboratory, U.S. Department of Energy, New York, NY.

Viola M. Solomon  
 Analyst/Radiocesium

3-1-96  
 Date

Carol J. [Signature]  
 Lead Technologist

3/1/96  
 Date

1

9836-96-070

## IFS Data Entry Form

Reviewed By

Winkowski

Date

9.8.96

Reactor/Vendor Inspection (IFS Option 1)

Docket Related P21 Items (IFS Option 1)

Items Opened (Y/N)

Enter Log Number

☒ Material Inspection (IFS Option 2)

LER Items (IFS Option 3)

S01 (Y/N)

Enter LER Number

Letter (Y/N)

Clear (Y/N)

Non-Docket Related Items (IFS Option 4)

Site Name ISOTOPE SPECIATIESReport Transmittal Date 04/09/96

Lead Inspector

HDC

Responsible Org Code

AB70

Report End Date

2/23/96

Region

4

Report NBR

A 96-01

Docket NBR

30-90006

Materials Only

License NBR

04-00580-0304-00580-07

B

C

Update? (Y/N): N

Opened IR/LER/P21 LOG/IFS Number:

\*\*\*Sequence NBR:

Item Type:

\*\*Severity:

\*\*Supplement:

Status

\*UPD VR

\*Proj. Closeout

\*Actual Closeout

10 CFR

Materials Only

License Cond.

Tie Down

A

B

C

Title:

(55 character width)

Closeout Org:

\*Closeout EMP:

\*Contact EMP:

\*Procedure:

\*Functl Area:

\*Cause CD:

\*\*EA Number:

\*\*NOV/NNC Issue Date: / /

Text:

Update? (Y/N):

Opened IR/LER/P21 LOG/IFS Number:

\*\*\*Sequence NBR:

Item Type:

\*\*Severity:

\*\*Supplement:

Status

\*UPD VR

\*Proj. Closeout

\*Actual Closeout

10 CFR

Materials Only

License Cond.

Tie Down

A

B

C

Title:

(55 character width)

Closeout Org:

\*Closeout EMP:

\*Contact EMP:

\*Procedure:

\*Functl Area:

\*Cause CD:

\*\*EA Number:

\*\*NOV/NNC Issue Date: / /

Text:

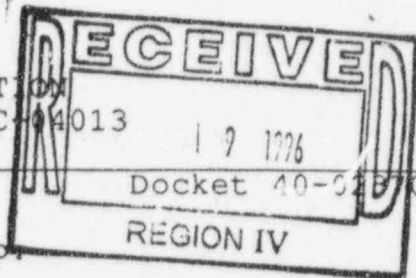
\* Optional Fields.

\*\* Severity, Supplement, and NOV/NNC only applicable for Violations; EA Number only applicable for Escalated Enforcement Items.

\*\*\* Sequence NBR is not applicable for docket related P21, LER, or non-docket related items.

ITEMS CONTINUED? (Y/N):

EXPERT SYSTEM LICENSE EVALUATION  
EVALUATION REPORT FOR LICENSE C-04013



INVENTORY CONTENTS FOR LICENSE NUMBER: C-04013

Licensee: RESEARCH CHEMICALS INC.

Address: BURBANK, CA

Zip:

Description of site: 170 WEST PROVIDENCIA ST. BURBANK

This license was listed as SUPERCEDED BY ANOTHER LICENSE

Contents of the new license field EXEMPT FROM LICENSING-8-29-61

State of operation: CA

Site used: 170 WEST PROVIDENCIA ST. BURBANK

Disposition information present: OTHER DOCUMENT PRESENT IN FILE

Contents of other:

LICENSEE STATED LARGE QUANTITIES OF THORIUM DISPOSED THRU SEWER

Other information about disposition:

LICENSEE STATED LARGE QUANTITIES OF THORIUM DISPOSED THRU SEWER

Remarks: DEC., 60 INSPECTION DISCOVERED DISPOSAL OF 190uCi of Th TO SEWER

JOB NUMBER: 0276 BOX NUMBER: 02

DESCRIPTION OF ACTIVITY OR FACILITY:

--For evaluation purposes, amounts of the following materials were obtained--

Material--	--Form--	--Amount--	--Unit--
NO INFORMATION ABOUT EXACT MATERIAL AMOUNTS ON FILE			

1. License is nonsuspect because it was superceded by another license

THIS LICENSE WAS ELIMINATED FROM CONSIDERATION

The reason for elimination was: SUPERCEDED BY NEW LICENSE

Reviewer's comments concerning license C-04013

A letter of 8-29-61 from E. R. Price of the AEC states that unless the Th content of the licensee's material exceeds 0.25% by weight, they are exempt from licensing.

A/145



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS  
DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY

FAX TRANSMITTAL

TO

LOCATION

1. Dean Chaney / Frank Wenslandri WCF0

FAX # ( ) VERIFICATION ( )

2. \_\_\_\_\_

FAX # ( ) VERIFICATION ( )

3. \_\_\_\_\_

FAX # ( ) VERIFICATION ( )

4. \_\_\_\_\_

FAX # ( ) VERIFICATION ( )

COMMENTS.

Lot of Isotopes Specialties licenses and evaluations, some  
of which you have. Note two source material licenses at  
Providence address. I'm checking Nuclear Corp. of America, U.S.  
Nuclear, and International Chemical and Nuclear just to be sure  
we've got all the relevant information.

COVER SHEET PLUS 13 PAGES

FROM: Paul Goldberg

PHONE: (301) 415-\_\_\_\_\_

FAX: (301) 415-5369

A1146

## FILE MATCHES IN INVENTORY DATA - CURRENT SEARCH IS:

SEARCH PARAMETER ONE: [CA ] IN State Code  
SEARCH PARAMETER TWO: [ISOTOPES SPEC ] IN Licensee name  
Search requires RECORD MATCH for BOTH PARAMETERS

1. 04-00580-01 Byproduct matls license  
LICENSEE:ISOTOPES SPECIALTIES COMPANY (INDUSTRIAL DEPT.) ADDRESS: 703 SOUTH MAIN STREET  
CITY: BURBANK ZIP: SITE OF USE: 703 SOUTH MAIN STREET, BURBANK, CALIFORNIA  
REGION: V STATE: CALIFORNIA JOB/BOX: 1722/18 Retirement date: 03/31/58  
SUPERCEDED BY: 04-00580-02 FACILITY: SEALED SOURCES MANUFACTUR Site score is zero  
Evaluation available Materials Possessed: 1. CO-60 SEALED
2. 04-00580-02 Byproduct matls license LICENSEE:ISOTOPES SPECIALTIES COMPANY  
ADDRESS: 703 SOUTH MAIN STREET CITY: BURBANK ZIP:  
SITE OF USE: 703 SOUTH MAIN STREET, BURBANK, CALIFORNIA REGION: V STATE: CALIFORNIA  
JOB/BOX: 1722/18 Retirement date: 05/31/57 SUPERCEDED BY: 04-00580-05  
FACILITY: SEALED SOURCES MANUFACTUR Site score is zero Evaluation available  
Materials Possessed: 1. S-35 LOOSE 2. H-3 LOOSE 3. CS-137 LOOSE
4. ANY BYPRODUCT MATERI LOOSE 5. IR-192 LOOSE 6. TM-170 LOOSE 7. CO-60 LOOSE
3. 04-00580-03 Byproduct matls license LICENSEE:ISOTOPES SPECIALTIES COMPANY  
ADDRESS: 703 SOUTH MAIN STREET CITY: BURBANK ZIP:  
SITE OF USE: 703 SOUTH MAIN STREET, BURBANK, CALIFORNIA REGION: V STATE: CALIFORNIA  
JOB/BOX: 1722/18 Retirement date: 09/30/57 SITE SCORE: 1492.6 Evaluation available  
Materials Possessed: 1. ANY BYPRODUCT MATERI LOOSE
4. 04-00580-03 Byproduct matls license LICENSEE:ISOTOPES SPECIALTIES COMPANY  
ADDRESS: BURBANK, CALIFORNIA CITY: BURBANK ZIP: NoZip  
SITE OF USE: 703 S. MAIN ST., & 170 WEST PROVIDENCIA, BURBANK, CA REGION: V  
STATE: CALIFORNIA JOB/BOX: 1449/04 Retirement date: 01/31/58 SITE SCORE: 1492.6  
Evaluation available Materials Possessed: 1. ANY BYPRODUCT MATERI LOOSE
5. 04-00580-04 Byproduct matls license  
LICENSEE:ISOTOPES SPECIALTIES COMPANY, INCORPORATED ADDRESS: 703 SOUTH MAIN STREET  
CITY: BURBANK ZIP: SITE OF USE: 703 SOUTH MAIN STREET, BURBANK, CALIFORNIA REGION: V  
STATE: CALIFORNIA JOB/BOX: 1722/18 Retirement date: 01/31/59  
SUPERCEDED BY: 04-00580-05 FACILITY: SEALED SOURCES MANUFACTUR Site score is zero  
Evaluation available Materials Possessed: 1. PO-210 SEALED
6. 04-00580-05 Byproduct matls license LICENSEE:ISOTOPES SPECIALTIES COMPANY INC  
ADDRESS: BURBANK, CALIFORNIA CITY: BURBANK ZIP: SITE OF USE: LICENSE'S ADDRESS  
REGION: V STATE: CALIFORNIA JOB/BOX: 0277/01 Retirement date: 07/31/59  
SUPERCEDED BY: 04-00580-07 Site score is zero Evaluation available
7. 04-00580-07 Byproduct matls license  
LICENSEE:ISOTOPES SPECIALTIES COMPANY, INCORPORATED ADDRESS: 170 WEST PROVIDENCIA  
CITY: BURBANK ZIP: SITE OF USE: 170 WEST PROVIDENCIA, BURBANK, CALIFORNIA REGION: V  
STATE: CALIFORNIA JOB/BOX: 1722/18 Retirement date: 12/31/58  
FACILITY: COMMERCIAL LABORATORY - R SITE SCORE: 7567.7 Evaluation available  
Materials Possessed: 1. H-3 LOOSE 2. PO-210 LOOSE 3. ANY BYPRODUCT MATERI LOOSE  
4. CO-60 LOOSE 5. CS-137 LOOSE 6. TM-170 LOOSE 7. IR-192 LOOSE 8. S-35 LOOSE  
9. SB-124 LOOSE
8. C-05352 Source materials license DOCKET: 40-00852  
LICENSEE:NUCLEAR CORPORATION OF AMERICA-ISOTOPES SPEC. CO.  
ADDRESS: 170 WEST PROVIDENCIA, BURBANK, CALIFORNIA CITY: ZIP:  
SITE OF USE: 170 WEST PROVIDENCIA, BURBANK, CALIFORNIA REGION: V STATE: CALIFORNIA  
JOB/BOX: 0528/02 Retirement date: 11/30/61 FACILITY: MANUFACTURE/FABRICATION



**SITE SCORE: 0.31 Evaluation available Materials Possessed: 1. SOURCE MATERIAL LOOSE**

---

**END OF PRINT LISTING FOR THE SEARCH MATCHES**

## FILE MATCHES IN INVENTORY DATA - CURRENT SEARCH IS:

SEARCH PARAMETER ONE: [CA ] IN State Code  
SEARCH PARAMETER TWO: [ISOTOPE SPEC ] IN Licensee name  
Search requires RECORD MATCH for BOTH PARAMETERS

1. C-03544 Source materials license DOCKET: 40-00858  
LICENSEE: ISOTOPE SPECIALTIES COMPANY INC  
ADDRESS: 703 SOUTH MAIN ST., BURBANK, CALIFORNIA CITY: ZIP:  
SITE OF USE: 703 SOUTH MAIN ST., BURBANK, CALIFORNIA REGION: V STATE: CALIFORNIA  
JOB/BOX: 0526/02 Retirement date: 01/31/59 SUPERCEDED BY: C-05352 ON  
Site score is zero Evaluation available

END OF PRINT LISTING FOR THE SEARCH MATCHES

EXPERT SYSTEM EVALUATION RESULTS FOR LICENSE NUMBER 04-00580-03  
CONCLUSION FOR LICENSE/SITE(S): HIGHEST PRIORITY FOR SITE RE-EVALUATION

---

## INVENTORY CONTENTS FOR FIRST INVENTORY RECORD

LICENSE NUMBER: 04-00580-03 ; LICENSEE: ISOTOPES SPECIALTIES COMPANY

Licensee: ISOTOPES SPECIALTIES COMPANY

Address: BURBANK, CALIFORNIA State code: CA

City: BURBANK State(address): CA Zip code: NoZip

LOCATION OF PHYSICAL FILE: JOB NUMBER: 1449 BOX NUMBER: 4

Principal state of operation: CALIFORNIA SUPERVISING REGION: V

Site information in inventory record:

703 S. MAIN ST., &amp; 170 WEST PROVIDENCIA, BURBANK, CA

Disposition info present: NO DISPOSITION INFORMATION WAS GIVEN

The inventory record shows license EXPIRATION DATE as: 01/31/58

THERE WERE NO OTHER LICENSE NUMBERS LISTED AS BEING IN THE SAME FILE

## --- GENERAL COMMENTS FOR INVENTORY RECORD ---

ACCORDING TO A LETTER TO THE AEC, THE MATERIAL WAS TO BE STORED, LATER PLACED IN  
BARRELS, FILLED WITH CONCRETE AND SLURRY, AND PREPARED FOR OCEAN DUMPING.

## INVENTORY CONTENTS FOR SECOND INVENTORY RECORD

LICENSE NUMBER: 04-00580-03 ; LICENSEE: ISOTOPES SPECIALTIES COMPANY

Licensee: ISOTOPES SPECIALTIES COMPANY

Address: 703 SOUTH MAIN STREET State code: CA

City: BURBANK State(address): CA Zip code:

Facility type: NUCLEAR SERVICES/WASTE DISPOSAL

LOCATION OF PHYSICAL FILE: JOB NUMBER: 1722 BOX NUMBER: 18

Principal state of operation: CALIFORNIA SUPERVISING REGION: V

Site information in inventory record:

703 SOUTH MAIN STREET, BURBANK, CALIFORNIA

Disposition info present: LICENSEE LETTER STATING DISPOSITION

There was a letter with disposition information recorded in the file

Contents of letter: MATERIAL WAS COLLECTED AND PREPARED FOR OCEAN DUMPING.

There was a definite reference in this file  
to practices of disposal, burial, or other dumping

The inventory record shows license EXPIRATION DATE as: 09/30/57

INVENTORY COMMENTS: WASTE DISPOSAL ACTIVITIES WERE CONDUCTED UNDER THIS LICENSE.

Other licensees in same physical file: 04-00580-07

## --- GENERAL COMMENTS FOR INVENTORY RECORD ---

ACCORDING TO A LETTER TO THE AEC, THE MATERIAL WAS TO BE STORED, LATER PLACED IN  
BARRELS, FILLED WITH CONCRETE AND SLURRY, AND PREPARED FOR OCEAN DUMPING.

---

EXPERT SYSTEM EVALUATION RESULTS

---

NRC EVALUATION SYSTEM REPORT LICENSE NUMBER: 04-00580-03 02/20/96

## DESCRIPTION OF FIRST SITE AT WHICH 04-00580-03 WAS USED

ISOTOPE SPECIALTIES COMPANY  
703 SOUTH MAIN STREET  
BURBANK, CALIFORNIA

The following information pertains to the SITE score, which is an evaluation of the likelihood that use of the authorized loose material at one or more sites under this license could have produced contamination, and that such contamination might not be detected using closeout procedures documented in information available at review time

=====

THIS LICENSE DID RECEIVE A NONZERO SITE SCORE, BASED ON THE  
INFORMATION AVAILABLE TO THE REVIEWERS AT EVALUATION TIME

=====

---

Materials and Forms Authorized During License Period

---

ISOTOPE	AUTHORIZED FORM
ANY BYPRODUCT MATERI	Loose

---

△ POSSESSION LIMITS FOR MATERIALS OBTAINED DURING THE EVALUATION:

Authorized Material-	-Form-	-Amount-	Unk (Cl,Gm,Lb)
ANY BYPRODUCT OR ANY	LOOSE	10.00	Cl

## INITIAL MATERIALS SCORES

The initial site score is based on the nature and possession limits of the authorized loose materials.

=====

INITIAL LOOSE MATERIALS SCORE COMPUTED FOR THIS LICENSE WAS: : 99.3

=====

CONCLUSION FOR LICENSE AND SITE(S): HIGHEST PRIORITY FOR SITE RE-EVALUATION  
THE FINAL SCORE FOR SITE CONTAMINATION IS: 1493  
SITE OR SITES UNDER THIS LICENSE HAVE THE HIGHEST PRIORITY FOR RE-EVALUATION

---



---

SYSTEM EVALUATION CONCLUSIONS

1. The inclusion of any byproduct material on the license was for the purpose of carrying out a WASTE DISPOSAL operation.
2. There was at least one loose material on this license for which the amount remaining was reduced according to the length of the half-life
3. There was one identifiable site with this license.
4. FIRST SITE: BUILDINGS: File information on activities and materials is too sketchy to make a reasonable guess about building contamination. Score not changed.
5. FIRST SITE: Description of activity was inadequate to determine whether outdoor contamination at the site was a likelihood. No change in score

6. FIRST SITE: There was insufficient information in file to determine the likelihood of release to the atmosphere or to soil or water from activities under this license. Score not changed.
7. FIRST SITE: There was PROBABLE use of glove boxes, hoods, or protective clothing. Change in score depends on subsequent questions.
8. FIRST SITE: Possible inappropriate disposal or abandonment of contaminated material from glove boxes, hoods, or equipment. Score = score \* 1.1
9. FIRST SITE: There was possible or limited generation of contaminated material from machinery used in the operation. Score = score \* 1.2.
10. FIRST SITE: Possible inappropriate disposal or abandonment of contaminated material from machinery (cloths, parts, etc). Score = score \* 1.1
11. FIRST SITE: There was limited generation of solid waste in the operation. Score = score \* 1.2
12. FIRST SITE: Some possibility that contaminated solid waste was inappropriately disposed of. Score = score \* 1.1
13. FIRST SITE: There was limited generation of liquid waste in the operation. Score = score \* 1.2
14. FIRST SITE: File contains information leading the reviewer to conclude that IF LIQUID WASTE WAS GENERATED, disposal through the SEWER SYSTEM was a possibility. Score = score \* 1.1
15. FIRST SITE: There was CONCRETE EVIDENCE OF POTENTIALLY SIGNIFICANT BURIAL OR DUMPING at the site. Score = score \* 2
16. FIRST SITE: Based on sparse information, the possibility of frequent turnover of materials limits under this license cannot be excluded. Thus, the score is being raised by a factor of 1.1
17. FIRST SITE: There were clearly licensed materials left onsite, or not disposed of properly. Score = score \* 1.5
18. FIRST SITE: There was NO closeout survey for this site. Since the current score is above 20, score was multiplied by 1.8
19. FIRST SITE: There was NOT an NRC FINAL INSPECTION of the facility. Score not changed.

#### ACTIVITIES CARRIED OUT UNDER THE LICENSE

THE COMPANY WAS COLLECTING WASTE MATERIAL FROM OTHER AEC LICENSED USERS FOR DISPOSAL BY OCEAN BURIAL.

#### REVIEWER'S COMMENTS CONCERNING TURNOVER OF MATERIALS

THERE WAS NO EVIDENCE OF THE TURN OVER RATE, BUT THE IMPRESSION THE REVIEWER HAD WAS THAT THE POSSIBILITY FOR A RAPID TURN OVER RATE EXISTED. THE MATERIAL WAS DISPOSED BY OCEAN BURIAL IN CEMENT FILLED BARRELS.



**REVIEWER'S COMMENTS CONCERNING WASTE GENERATION**

THERE WAS NO EVIDENCE OF PROTECTIVE CLOTHING BEING WORN, BUT THE REVIEWER ASSUMED THAT THE WORKERS DID WEAR IT. THERE IS A SLIGHT POSSIBILITY THAT THE MATERIALS COULD HAVE BEEN LEFT ONSITE, BUT MORE THAN LIKELY, THE CLOTHING WAS PLACED IN THE DISPOSAL DRUMS AS WELL. THE MACHINERY USED TO HAUL THE MATERIAL TO AND FROM ISOTOPES SPECIALTIES COULD HAVE BEEN CONTAMINATED. SOLID WASTE WAS DEFINITELY PRODUCED BY THIS COMPANY. LIQUID WASTE COULD HAVE ALSO BEEN PRODUCED. THE MATERIAL WAS NOT DISPOSED ON SITE, BUT IN THE OCEAN. THE REVIEWER FELT THAT THIS WAS NOT PROPER DISPOSAL SO THE CHOICE THAT INCREASED THE SCORE THE MOST WAS PICKED.

---

**GENERAL COMMENTS ABOUT THE LICENSE EVALUATION**

- THE LICENSEES WAS OPERATING A DISPOSAL FACILITY WHICH ALLOWED THEM TO COLLECT WASTE FROM
- OTHER LICENSEES, PREPARE IT FOR DISPOSAL, AND THEN DISPOSE OF IT IN THE OCEAN. THE
- MATERIAL WAS PACKAGED INTO 55 GALLON DRUMS AND FILLED WITH SLURRY. A LAYER OF CONCRETE
- WAS THEN ADDED TO THE BARREL AND SEALED WITH A RING. THE MATERIAL WAS PLACED ON A SHIP AND
- TAKEN TO THE DESIGNATED DISPOSAL AREA AND DUMPED. THE MATERIALS COULD BE ANY BYPRODUCT
- MATERIAL WITH ATOMIC NUMBER 3-83 AND/OR SOURCE MATERIAL.

THIS CONCLUDES THE REPORT FOR LICENSE NUMBER 04-00580-03

EXPERT SYSTEM EVALUATION RESULTS FOR LICENSE NUMBER 04-00580-07  
CONCLUSION FOR LICENSE/SITE(S): HIGHEST PRIORITY FOR SITE RE-EVALUATION

## INVENTORY CONTENTS FOR FIRST INVENTORY RECORD

LICENSE NUMBER: 04-00580-07 ; LICENSEE: ISOTOPES SPECIALTIES COMPANY, INCORPORATED

Licensee: ISOTOPES SPECIALTIES COMPANY, INCORPORATED

Address: 170 WEST PROVIDENCIA State code: CA

City: BURBANK State(address): CA Zip code:

Facility type: COMMERCIAL LABORATORY - RESEARCH

LOCATION OF PHYSICAL FILE: JOB NUMBER: 1722 BOX NUMBER: 18

Principal state of operation: CALIFORNIA SUPERVISING REGION: V

Site information in inventory record:

170 WEST PROVIDENCIA, BURBANK, CALIFORNIA

Disposition info present: NO DISPOSITION INFORMATION WAS GIVEN

The inventory record shows license EXPIRATION DATE as: 12/31/59

INVENTORY COMMENTS: BYPRODUCT MATERIAL WAS RESOLD AND USED IN RESEARCH.

Other licenses in same physical file: 04-00580-03

## EXPERT SYSTEM EVALUATION RESULTS

## DESCRIPTION OF FIRST SITE AT WHICH 04-00580-07 WAS USED

ISOTOPES SPECIALTIES COMPANY, INCORPORATED

INDUSTRIAL DEPARTMENT

170 WEST PROVIDENCIA

BURBANK, CALIFORNIA

The following information pertains to the SITE score, which is an evaluation of the likelihood that use of the authorized loose material at one or more sites under this license could have produced contamination, and that such contamination might not be detected using closeout procedures documented in information available at review time

=====

THIS LICENSE DID RECEIVE A NONZERO SITE SCORE, BASED ON THE  
INFORMATION AVAILABLE TO THE REVIEWERS AT EVALUATION TIME

=====

## Materials and Forms Authorized During License Period

ISOTOPE	AUTHORIZED FORM
H-3	Loose
PO-210	Loose
ANY BYPRODUCT MATERI	Loose
CO-60	Loose
CS-137	Loose
TM-170	Loose
IR-192	Loose
S-35	Loose
SB-124	Loose

△ POSSESSION LIMITS FOR MATERIALS OBTAINED DURING THE EVALUATION:

Authorized Material-	-Form-	-Amount-	Unit (Cl,Gm,Lb)
H-3	LOOSE	100.0	Cl
PO-210	LOOSE	80.0	Cl
ANY BYPRODUCT MATERI	LOOSE	500.0	Cl
CO-60	LOOSE	2000.0	Cl
CS-137	LOOSE	1000.0	Cl
TM-170	LOOSE	100.0	Cl
IR-192	LOOSE	80.0	Cl
S-35	LOOSE	175.0	Cl
SB-124	LOOSE	50.0	Cl

INITIAL MATERIALS SCORES

The initial site score is based on the nature and possession limits of the authorized loose materials.

=====

The initial loose materials score computed for this license was: : 513

=====

CONCLUSION FOR LICENSE AND SITE(S): HIGH ST PRIORITY FOR SITE RE-EVALUATION  
 THE FINAL SCORE FOR SITE CONTAMINATION IS: 7568  
 SITE OR SITES UNDER THIS LICENSE HAVE THE HIGHEST PRIORITY FOR RE EVALUATION

SYSTEM EVALUATION CONCLUSIONS

1. Activities under this license involving use of 'any byproduct matl' were not specified clearly. Cannot determine likelihood of hazard.
2. There was at least one loose material on this license for which the amount remaining was reduced according to the length of the half-life
3. There was one identifiable site with this license.
4. FIRST SITE: BUILDINGS: Information about the facility and knowledge of materials and usage were sufficient to lead the reviewer to strong suspect meaningful contamination for BUILDINGS. Score raised by a factor of 1.5
5. FIRST SITE: There was NO verifiable decontamination of the BUILDINGS onsite at closeout. Score = score\*1.2
6. FIRST SITE: Description of activity was inadequate to determine whether outdoor contamination at the site was a likelihood. No change in score
7. FIRST SITE: There was insufficient information in file to determine the likelihood of release to the atmosphere or to soil or water from activities under this license. Score not changed.
8. FIRST SITE: There was PROBABLE use of glove boxes, hoods, or protective clothing. Change in score depends on subsequent questions.
9. FIRST SITE: Possible inappropriate disposal or abandonment of contaminated material from glove boxes, hoods, or equipment. Score = score\*1.1

NRC EVALUATION SYSTEM REPORT LICENSE NUMBER: 04-00580-07 02/20/96

10. FIRST SITE: There was possible or limited generation of contaminated material from machinery used in the operation. Score = score\*1.2.
11. FIRST SITE: Possible inappropriate disposal or abandonment of contaminated material from machinery (cloths, parts, etc). Score = score\*1.1
12. FIRST SITE: There was limited generation of solid waste in the operation. Score = score\*1.2
13. FIRST SITE: Some possibility that contaminated solid waste was inappropriately disposed of. Score = score\*1.1
14. FIRST SITE: There was limited generation of liquid waste in the operation. Score = score\*1.2
15. FIRST SITE: File contains information leading the reviewer to conclude that IF LIQUID WASTE WAS GENERATED, disposal through the SEWER SYSTEM was a possibility. Score = score\*1.1
16. FIRST SITE: There was SOME indication of possible burial or dumping Score = score\*1.5
17. The information available concerning the operations carried out under this license is insufficient to make any judgment of the frequency of turnover for operation. Accordingly the score will not be changed at this point.
18. FIRST SITE: There was either no documentation of materials disposition or the documentation was inadequate. Score = score\*1.2
19. FIRST SITE: There was NO closeout survey for this site. Since the current score is above 20, score was multiplied by 1.8
20. FIRST SITE: There was NOT an NRC FINAL INSPECTION of the facility. Score not changed.

#### ACTIVITIES CARRIED OUT UNDER THE LICENSE

THE LICENSEE WAS ALLOWED TO PROCESS AND DISTRIBUTE BYPRODUCT MATERIALS TO OTHER LICENSEES. THE LICENSEE WAS ALSO AUTHORIZED TO CONDUCT RESEARCH AND DEVELOPMENT WITH TRITIUM AND SULFUR 35.

#### REVIEWER'S COMMENTS CONCERNING TURNOVER OF MATERIALS

THERE WAS NOT ENOUGH INFORMATION IN THE FILE TO DETERMINE THE AMOUNT OF MATERIAL THAT WAS USED AT ANY ONE TIME. TRITIUM WAS THE ONLY ISOTOPE THAT WAS LIMITED TO A SPECIFIC AMOUNT, 100 CURIES.

#### REVIEWER'S COMMENTS REGARDING POTENTIAL CONTAMINATION

A DRAFT LETTER WAS INCLUDED IN THE FILE. THIS LETTER INDICATED THAT THE LICENSEE'S SURVEY EQUIPMENT WAS INOPERABLE FOR 2 MONTHS AND THERE WAS A HIGH DEGREE OF CESIUM AND POLONIUM CONTAMINATION IN THE LABORATORIES. NO OTHER DETAILS WERE PROVIDED.

**REVIEWER'S COMMENTS CONCERNING WASTE GENERATION**

CLOTHING MAY HAVE BEEN WORN BY THE WORKERS, BUT NO INFORMATION WAS PROVIDED. NO DISPOSAL METHODS WERE GIVEN BY THE LICENSEE. HEAVY MACHINERY COULD HAVE BEEN USED IN THE PROCESSING OF THE MATERIALS, BUT NO SPECIFIC DETAILS WERE PROVIDED. AGAIN, NO DISPOSAL METHODS WERE DESCRIBED. SOLID AND LIQUID WASTE COULD HAVE BEEN PRODUCED, DEPENDING ON THE KINDS OF ISOTOPES THE COMPANY POSSESSED AND WHAT TYPE OF PRODUCT THEY WERE DISTRIBUTING. NO METHODS OF DISPOSAL WERE GIVEN FOR THE MATERIALS OR THE WASTE.

**REVIEWER'S COMMENTS CONCERNING POTENTIAL BURIAL OR DUMPING**

THE COMPANY WAS ALSO A WASTE DISPOSAL COMPANY. THE DISPOSAL OF ALL MATERIALS AND WASTE WERE PROBABLY MADE THRU THIS DIVISION. THE METHOD THE COMPANY USED WAS OCEAN DUMPING.

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**GENERAL COMMENTS ABOUT THE LICENSE EVALUATION**

- THE LICENSEE WAS AUTHORIZED BY PRODUCT MATERIALS FOR USE IN PROCESSING, DISTRIBUTION,
- RESEARCH, AND DEVELOPMENT. NO INFORMATION WAS PROVIDED AS TO HOW THESE MATERIALS WERE
- DISPOSED OR WHAT TYPE OF RESEARCH AND DEVELOPMENT WAS CONDUCTED. THE INFORMATION WAS
- VAGUE.

THIS CONCLUDES THE REPORT FOR LICENSE NUMBER 04-00580-07



**EXPERT SYSTEM EVALUATION RESULTS FOR LICENSE NUMBER C-05352****INVENTORY CONTENTS FOR FIRST INVENTORY RECORD****LICENSE NUMBER: C-05352     DOCKET NUMBER: 40-00858****Licensee: NUCLEAR CORPORATION OF AMERICA-ISOTOPES SPEC. CO.****Address: 170 WEST PROVIDENCIA, BURBANK,CALIFORNIA     State code: CA****City:     State(address): CA     Zip code:****Facility type: MANUFACTURE/FABRICATION****LOCATION OF PHYSICAL FILE: JOB NUMBER: 0529     BOX NUMBER: 2****Principal state of operation: CALIFORNIA     SUPERVISING REGION: V****Site information in inventory record:****170 WEST PROVIDENCIA, BURBANK,CALIFORNIA****Disposition info present: NO DISPOSITION INFORMATION WAS GIVEN****The inventory record shows license EXPIRATION DATE as:****11/30/81****INVENTORY COMMENTS: COMPANY WAS SOLD TO U S NUCLEAR CORP. IN EARLY 1961****THERE WERE NO OTHER LICENSE NUMBERS LISTED AS BEING IN THE SAME FILE**

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**EXPERT SYSTEM EVALUATION RESULTS**

The following information pertains to the SITE score, which is an evaluation of the likelihood that use of the authorized loose material at one or more sites under this license could have produced contamination, and that such contamination might not be detected using closeout procedures documented in information available at review time

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**THIS LICENSE DID RECEIVE A NONZERO SITE SCORE, BASED ON THE  
INFORMATION AVAILABLE TO THE REVIEWERS AT EVALUATION TIME**

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**Materials and Forms Authorized During License Period**

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<b>ISOTOPE</b>	<b>AUTHORIZED FORM</b>
<b>SOURCE MATERIAL</b>	<b>Loose</b>

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**INFORMATION ON POSSESSION LIMITS IS NOT AVAILABLE FOR THIS LICENSE**

The initial site score is based on the nature and possession limits of the authorized loose materials.

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**THE LOOSE MATERIALS FOR THIS LICENSE RECEIVED AN INITIAL SCORE OF: 0.31**

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**SITE CANNOT BE ELIMINATED, LOW ASSESSED LIKELIHOOD FOR SITE CONTAMINATION**

The final SITE SCORE for this license is BELOW 1

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**SYSTEM EVALUATION CONCLUSIONS**

1. License authorization was for loose materials, or materials handled loose, no sealed sources included.

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**GENERAL COMMENTS ABOUT THE LICENSE EVALUATION**

- 703 SOUTH MAIN ST. IN BURBANK, CA. MAY ALSO BE A SITE OF USE OR STORAGE.
- THE AEC LETTER OF 1-30-61 TO THE LICENSEE APPEARS TO APPLY TO THE BYPRODUCT LICENSE (MORE THAN THE SOURCE MATERIAL LICENSE) REGARDING THE SALE OF THE COMPANY TO U.S. NUCLEAR AND
- THE REQUIRED DECONTAMINATION.

THIS CONCLUDES THE REPORT FOR LICENSE NUMBER C-05352