U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 03007490/79-01

Docket No. 03007490 License No. 12-11286-01

Licensee: Atomic Disposal Company, Inc.
P.O. Box 35
Tinley Park, IL 60477

Facility Name: Atomic Disposal Co., Inc.

Inspection At: 7221 and 7225 Duvan Drive, Tinley Park, IL

Inspection Conducted: June 20, 1979

Inspectors: S. R. Lasuk S. R. Lasuk 7/11/79
Carl J. Paperiello 7/18/79
for K. N. Schneider

Approved By: Carl J. Paperiello 7/18/79
C. J. Paperiello, Chief,
Materials Radiological
Protection Section No. 1

Inspection Summary

Inspection on June 20, 1979 (Report No. 03007490/79-01).
Areas Inspected: Special, unannounced inspection of licensee's organization; training; radiological protection and emergency procedures; material, facilities, and equipment; receipt and transfer of materials; personnel exposure controls; posting and labeling; shipping incidents; notifications and reports; confirmatory measurements. The inspection involved ten inspector-hours onsite by two inspectors.
Results: Of the ten areas inspected, no items of noncompliance were identified in six areas; four apparent items of noncompliance (infraction-opening packages of waste material-Paragraph 7; infraction-possessing packages of waste material for greater than six months after receipt-Paragraph 8; deficiency-failing to post documents or notice required by 10 CFR 19.11(a) and (b)-Paragraph 10; deficiency-exposure records lacking social security numbers and date of birth-Paragraph 12) were identified in four areas.

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Details

1. Persons Contacted

*James P. Bell, President
Richard E. Haas, Health Physicist (Consultant)
Sharon Ertl, Secretary

The inspectors were accompanied by Gene H. Albers of the Federal Highway Administration, Office of Motor Carrier Safety, Homewood, Illinois, who inspected the licensee's activities as they apply to the U.S. Department of Transportation regulations.

*Denotes individuals attending exit interview.

2. Scope of Inspection

This unannounced special inspection was conducted following a request from IE Headquarters on June 13, 1979. All licensees who shipped waste to Beatty, Nevada, were to be inspected during the week of June 18-22, 1979.

The licensee picks up packages containing waste byproduct and source material from approximately 100 regular customers (hospitals, universities, etc.) within about a 500 mile radius, transports the packages in his vehicles to his facility in Tinley Park, Illinois, where the packages are stored pending shipment to an authorized recipient for disposition.

This inspection covered the licensee's operations since the previous inspection on March 9, 1978.

3. Licensee Action on Previous Inspection Findings

No previous items of noncompliance.

4. Organization

James P. Bell, President
Gwen Bell, Vice President and Treasurer
Robert Bassett, Secretary

The licensee's management organization remains unchanged since the last inspection. No items of noncompliance were identified.

5. Training, Retraining, and Instructions to Workers

The licensee's "Instruction and Training Program" is attached to this report. Mr. Richard E. Haas, consultant Health Physicist, provides the formal training. Oral tests are used to check the trainee's progress. Mr. Haas determines when an individual is qualified to participate in this licensed program. The program appears to meet the requirements in the licensee's application dated June 11, 1968.

No items of noncompliance were identified.

6. Radiological Protection and Emergency Procedures

Operating Procedures submitted with application dated May 25, 1978, which is referenced in License Condition No. 2, have four major headings: (a) preparation for waste pickup, (b) procedures at the customer's facility, (c) procedure at the storage facility, and (d) surveys at the storage facility. Under (d), the licensee is required to conduct monthly contamination and radiation levels surveys in his waste storage facility and record the results. Survey records covering the period of March 7, 1978 to June 5, 1979 were reviewed during this inspection. Results are discussed in Paragraph 10.

The licensee's Emergency Procedures, also submitted with the May 25, 1978 application, cover minor and major spills, accidents involving airborne radioactivity, fire, accidents involving the transferring vehicle, and emergency phone numbers. The licensee's procedures appear to meet regulatory requirements.

No items of noncompliance were identified.

7. Materials, Facilities, and Equipment

a. Materials

The licensee's storage facilities currently contain approximately 1,800 packages (drums) of waste byproduct or source materials. No special nuclear material is in this inventory. The licensee does not handle any type B quantities. Mr. Bell estimated 700 to 800 drums contain liquid scintillation vials.

Approximately once every three months, a drum has to be opened according to Mr. Bell because there is reason to believe it was packaged improperly. This is an item of noncompliance with License Condition No. 6 which states: "the licensee shall not open packages containing waste byproduct, source, and special nuclear material". No records are maintained to show which drums were opened.

Although the licensee maintains a file of shipment records showing receipt and transfer of radioactive material, no summary log of current inventory is maintained that can demonstrate compliance with possession limits specified by the license. Consequently, the inspectors could not determine if the licensee's inventory is within the authorized possession limits. However, a sampling of the shipment records showed the average drum sampled to contain less than one curie of material. This fact and the number of drums on hand implies that the licensee probably has not exceeded his possession limits. This matter is considered unresolved pending the establishment of a system by the licensee to control inventory.

b. Facilities

The licensee's storage facilities are of cement block construction with sprinkler system and burglar alarm system covering exterior windows and doors. The sprinkler system alarms in the Tinley Park Fire Department which is located about one mile from licensee's facilities. The burglar system alarms in the A and R Security office in Blue Island, Illinois who, in turn, call the Tinley Park Police Station which is adjacent to the Fire Department. Mr. Bell stated that they have had no thefts or losses of licensed material.

c. Equipment

Licensee has four trucks for transferring packaged waste from a customer's site to the storage area in Tinley Park. He will also supply customers with containers (drums or pails) and/or vermiculite, when needed.

Licensee has a variety of portable survey instruments, Eberline area monitor, Baird Atomics gas flow counting system, and an Atomic Accessories Hi Vol air sampler which appear to satisfy the needs of this type of program.

One apparent item of noncompliance was identified.

8. Receipt and Transfer of Material

Packaged waste is surveyed by the licensee at the customer's site and results entered on the Radioactive Shipment Record form. The licensee has a record of each shipment transferred to his facility in Tinley Park.

The licensee has, or will, transfer waste to the following locations for disposition: Barnwell, S.C. (Chem-Nuclear Systems, Inc.), Galveston, TX (Todd Shipyards Corp.), Beatty, Nev., and Richland, Wash. Waste was shipped to Nuclear Engineering Co., Inc. at Sheffield, Illinois for disposition before this burial site was shut down.

When the licensee ships a package of waste, that package is identified on his copy of the Radioactive Shipment Record; he also shows the date when that package was shipped (and, removed from his inventory of stored waste). During a review of the licensee's receipt and transfer records, it was found that the current waste inventory included packages of byproduct material which the licensee received on October 21, 1977, December 1, 1977, December 7, 1977, January 12, 1978, April 3, 1978, October 26, 1978, in addition to other dates which were more than six months before this inspection was conducted on June 20, 1979.

This is an item of noncompliance with License Condition No. 8 which states: "the licensee shall not possess any package containing waste byproduct, source, and special nuclear material for a period of more than six months from the date of receipt of the package".

One apparent item of noncompliance was identified.

9. Shipping Incidents

The licensee's 1977 Chevrolet C-60 truck, which was loaded with thirty-nine 55-gallon drums of depleted uranium mixed with concrete and packing waste, tipped over on December 19, 1978 when the driver swerved to avoid a collision with another vehicle which spun out of control in front of him. The drums were not damaged and there was no release of radioactive material. The incident was reported to Region III telephonically on December 20, 1978 and then in a letter from Mr. Bell, dated January 12, 1979. The State of Wisconsin Radiation Protection Section responded to this accident and confirmed that no material was released.

No items of noncompliance were identified.

10. Exposure Controls - External

Licensee employs the services of Landauer, Jr., and Company for monthly body film badge processing. The highest quarterly exposure for the period of March 1, 1978 to May 31, 1979 was 40 millirem. The licensee's exposure records do not show the social security number and/or date of birth for all personnel who wear a film badge. This is an item of noncompliance with 10 CFR 20.401(a) which requires records showing radiation exposures on Form NRC-5, in accordance with the instructions contained in that form, or on a clear and legible record containing all the information required by Form NRC-5. The individual's social security number and birth date are required on Form NRC-5.

Radiation surveys (smears and direct) are conducted in the waste storage areas on approximately a monthly frequency by Mr. Haas. These surveys are made in the accessible walking areas around the stored waste; smears are obtained from areas of the floor. Survey results are recorded and maintained for inspection; these records indicated no unusual floor contamination problems and maximum direct reading of about 1.0 mR/hr. According to Mr. Bell, their vehicles are smear surveyed and direct surveys are conducted in unrestricted areas outside their waste storage facility monthly by Mr. Haas but the results are not recorded.

One apparent item of noncompliance was identified.

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11. Exposure Control - Internal

Mr. Haas collects air samples using the Hi Vol sampler in the waste storage area on a monthly basis. The samples are counted using the gas flow counting system and results recorded along with the other surveys which he conducts at this time. The air sample from the previous month is recounted to check for any long-life component; this recount is also recorded. Records indicated no unusual airborne contamination.

The licensee has dust masks by 3M plus assault-type full face masks with filters for radioactive and highly toxic dusts, fumes, and mists available if needed. The licensee has no approved respiratory protection program but does not use protection factors for face masks.

No items of noncompliance were identified.

12. Posting of Notices

Posting and labeling of waste storage areas and packages (drums) was noted to be in accordance with applicable sections of 10 CFR 20.203.

Form NRC-3, "Notice to Employees" was posted at the licensee's facility. However, neither the license, 10 CFR Part 19, Part 20, nor a notice describing these documents and stating where they may be examined, was posted. This is an item of noncompliance with 10 CFR 19.11(a) and (b).

One apparent item of noncompliance was identified.

13. Notifications and Reports

A vehicle incident which demolished a portion of licensee's waste transporting truck in December, 1978, was reported as required. Details are covered in item 9 of this report.

No items of noncompliance were identified.

14. Confirmatory Measurements

Independent direct surveys (using an Eberline GM meter, model E-530, NRC No. 000708, calibrated on April 20, 1979) were made in licensee's waste storage areas at 7221 and 7225 Devan Drive. At 7221, a reading of approximately 55 mR/hr was obtained at the surface of a 55-gallon drum; however, this area of the drum was turned toward other drums and therefore did not cause any unusual radiation levels in the walking area. All other surveyed areas at this location showed a maximum of about 2 mR/hr from drums. The highest reading at 7221 was approximately 5 mR/hr.

No items of noncompliance were identified.

15. Department of Transportation Regulations

The Federal Highway Administration representative stated that his inspection of this program revealed several items of noncompliance with DOT regulations which were of the deficiency type; that is, matters dealing with required paperwork.

16. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraph 7.

17. Exit Interview

The inspectors met with Mr. Bell at the conclusion of this inspection at his Tinley Park facility on June 20, 1979 and summarized the findings noted in the body of this report. The four items of noncompliance were discussed as well as the inspectors' concern for his inability to show that his radioactive waste was within authorized possession limits.

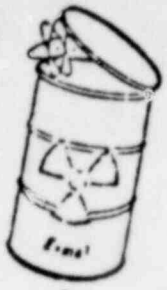
Mr. Bell stated that he thought his license authorized him to open a package if there was a need to do so. He gave the examples of blood oozing from a package containing animal carcasses or items rattling within a sealed drum. If necessary, he plans to contact the NRC licensing branch to seek relief from this restriction. It appears appropriate for the licensee to request a license modification to permit opening packages under conditions such as this, rather than to ship a suspect package.

The inspectors were told that the closing of NECO, certain state restrictions, current transportation problems in the trucking industry, plus the fact that some sites cannot or would not accept certain waste has created a waste disposition problem for the licensee. Mr. Bell recently learned that the Todd Shipyards Corp. will accept most of his waste; he plans to ship his depleted uranium chips to the Barnwell, S.C. site (if, and when, trucks are available).

In a discussion of his current inventory of licensed material, Mr. Bell stated that he could not see how they could ever exceed the authorized possession limits (as shown in License Condition No. 1) because they are so high. However, he did voice his concern over the lack of a method to determine the quantity of each isotope in storage. One of the problems he faces is that customers currently record the total millicuries of activity in a given package but, the package may contain two or more different isotopes. Therefore, the licensee cannot accurately state the quantity of each isotope in such packages.

The licensee was informed, once again, that the request to conduct this special inspection came from NRC Headquarters following a recent incident at a Beatty, Nevada waste disposal site.

Attachment: Instruction and Training Program



ATOMIC DISPOSAL CO., INC.
14532 S. KEDZIE AVE. • MIDLOTHIAN, ILLINOIS 60445 • 312/747-2800
AEC LICENSE NO. 12-11286-1

Rec'd. 6/20/79 from Mr. Bell

INSTRUCTION AND TRAINING PROGRAM

To qualify for the program, the trainee must be a high school graduate. The trainee will begin with seven to twelve hours of instruction (depending on the individuals previous instruction and experience) in the subjects listed in the outline. The trainee will be expected to know pertinent facts similar to those samples listed at the end of this summary. The questions, derived to bring out these facts in the answers, must be correct before completion of each part of the training program. Incorrect or incomplete answers will be discussed further and the trainee re-examined at a later date.

The instruction will also consist of a discussion of 10 CFR 20 to determine where limits on exposure or exposure rate may be exceeded such as the outside fence at the storage house and what can be done to reduce or eliminate such radiation levels. Labelling and record requirements will be interpreted in terms of the requirments for the storage site, packages and truck. Likewise the Emergency Procedures will be reviewed to examine the reasoning behind the duties expected of the trainee should such an emergency arise.

The Operating Procedures will be reviewed and the trainee's knowledge of the procedures checked during the on-the-job training section of the program.

This part of the program will consist of at least five supervised pickups of radioactive wastes of varied isotope and activity. The trainee will perform each step listed in the Operational Procedures and record the necessary records in the truck log, shipping papers or survey form. The trainee's performance with survey meters and interpretation of their readings will be evaluated at this time. Performance to be required will be the use of the proper scale or range switch for locating radiation sources, proper relation of the probe to the radiation source depending on the type of radiation emitted, correct reading of the meter and use of the calibration correction factor, and use of the check source to determine instru-

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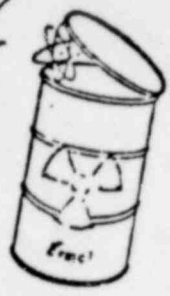

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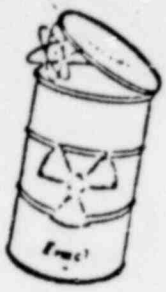
AEC LICENSE NO. 12-11286-1

ment operation condition. Active participation in the calibration of a survey meter will be used as training for these techniques as well as a demonstration of the inverse square law.

The trainee will be kept informed of pertinent changes in AEC or DOT regulations. Past performance will be checked periodically by reviewing shipping papers, truck logs, and survey forms with the trainee for irregular readings. Any improper techniques or interpretations will be discussed and corrected immediately.

SAMPLE OF ANSWERS REQUIRED OF ORAL QUESTIONS:

1. Radiation is emitted by the nucleus of an unstable radioactive atom.
2. Radiation looses energy and causes damage by collisions with orbitting electrons.
3. The degree of radiation penetration through matter increases with energy (MEV) and type of radiation (Alpha, Beta, Gamma)
4. Common beta-only emitters like H^3, S^{35}, C^{14}, Ca^{45} cannot have measurable exposure rates outside a metal container.
5. The exposure rate (MR/hr) from a source is proportional to the activity (MC).
6. Personnel exposures can be limited by time, distance and/or shielding and by preventing the intake of isotopes through cleanliness and survey procedures.
7. Total body exposures of 100 MR per week are permitted operational limits at which level no somatic or genetic hazard should exist.
8. Detectable somatic changes may be detected for total body exposures of about 25R or greater if received in a period of time less than several days.
9. Exposure recording devices like film badges or pocket chambers can have their readings ruined by exposure to light or mechanical shock.
10. G.M. Meters must be calibrated to read MR/hr, can read zero in very high dose rates and is best used to locate radiation.
11. If survey meter reads 10 MR/hr at 3 feet from a small source, the meter should read about .4MR/hr at 15 feet (assuming inverse square falloff of radiation.



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AEC LICENSE NO. 12-11286-1

OUTLINE OF INSTRUCTIONS FOR TRAINING PROGRAM
AEC LICENSE NO. 12-11286-1

I. Fundamentals of Radiation Safety
   - A. Nuclear Terminology
   - B. Typical Nuclides-their radiations and half-lives
   - C. Characteristics of Alpha, beta, gamma, neutron radiations
   - D. Units of activity, energy and dose
   - E. Methods for controlling internal and external exposures
   - F. Permissible doses and biological effects of radiation
   - G. Emergency procedures - plant and transportation incidents

II. Instrumentation
   - A. Personal Monitoring - Film badge and pocket dosimeter
   - B. Survey Instruments - G.M. meters and Cutie Pie
   - C. Laboratory - type counters

III. AEC and ICC Regulations and Limitations on Dose Rates and Activity

IV. Operating and Survey Procedures - as in AEC license

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