

LANL 2002 TR-02

Repository Number 124

Document on File Partial

Document Number ER 0007124

Document Title H-Division Progress Report

Author(s)

Organization(s)

Keyword(s)

H-1

chemical
episodic release
Polonium
radionuclide

Document Abstract

Memo reporting accidental release of up to 2 curies of polonium at Pajarito Site with subsequent extensive contamination of off site homes. Also provides a summary of analyses completed during the reporting period that includes analyses for bioassay (urinalysis).

Publication Date

12/31/1953

Period Start

12/20/1952

Period Stop

01/20/1953

Analysts's Comments on Document's Relevance to Dose Reconstruction

Copy of report is not complete: Pages 1, 7, 18, 19 and 21 (of 25) only.

Project(s)

Analyst

Review Date

Tom Mongan

03/10/1999

CDC Category

1

Technical Area(s)

18

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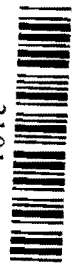
Original Location of Document

LANL ARC

E-11-115, TR11921

TR-18,33,35,2,16

3101



5pp (124) Cat 1
JA-35

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H-DIVISION PROGRESS REPORT

AUG 04 1992
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December 20, 1952 - January 20, 1953

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53-1

I. ADMINISTRATION (Thomas L. Shipman, M. D., Leader):

A. General Remarks:

On January 8, 1953, it was discovered that a mock fission polonium-beryllium source at Pajarito Site had ruptured and at that time resulting contamination had already been spread to the housing area. Possibly as much as 2 curies of polonium were actually lost; the greater part of the contamination, of course, was in and around the laboratory at Pajarito, but significant amounts were found in a number of homes. Steps were taken immediately to determine whether or not any of the laboratory personnel involved and members of their families had absorbed sufficient amounts of polonium to be of biological significance. An extensive program of urine assays has indicated that in no case did any person absorb polonium in amounts greater than permissible limits.

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Engene Landman

The relative absence of a truly hazardous situation does not minimize the importance of this incident. All available members of Group H-1 were assigned to survey and decontamination, while the load on the Laboratory Section of H-5 was tremendously increased. The facility with which this material is spread around is amazing and the problem which presented itself seemed almost insoluble. Among the objects found to be contaminated were not only shoes, clothing, and floor coverings, but also vacuum cleaners, children's toys, baby diapers, etc., indefinitely. Rugs and upholstered furniture have presented possibly the most serious problem in that it is extremely difficult to be certain that contamination actually has been removed. The greatest amount of contamination outside the laboratory was confined to three homes, although lesser amounts were found in a large number of others. Decontamination procedures are continuing; a significant number of items such as rugs, furniture,

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E. General Remarks:

1. In preparation for the forthcoming Upshot-Knothole test series to be held at the Nevada Proving Ground in the spring of 1953, this Group has been actively engaged in the planning by J-Division and other participating Laboratory groups. Safety review of planned facilities and operating procedures has been continuous.

2. Investigation has been made on the suitability of a full-scale high-explosive test site for Group W-3. Proximity to Route 4 and the Bandelier National Monument has been a limiting feature. A test shot was held at TA-33 to prove the usefulness of a site protected by a canyon wall; seismograph measurements were made at Bandelier at the same time. While the results showed the contemplated test site to be unsuitable because of the fragility of the canyon wall, we also learned that the seismic displacement at Bandelier was negligible. Since this test was the largest ever held so close to Bandelier, all misgivings should be ended as to the effect of Laboratory activities on the Indian ruins and the walls overlooking them.

Classification changed to Unclassified
by authority of W. H. Langham, John B. Storer, M. D.
(Person authorized to change classification) (Date)
By [Signature]
(Signature of person making the change, and date)

V. GROUP H-4. BIOMEDICAL RESEARCH (W. H. Langham, John B. Storer, M. D.)

A. Biochemistry Section:

1. Koenig, Perrings, Larkins:

Work on the effects of radiation on fibrinogen in the dry state and in the presence of various gases is still in progress. This work is being done by Mr. Perrings.

Mrs. Larkins is making solubility curves on all fibrinogen that is being irradiated in order to determine the effects of radiation on the solubility behavior of proteins.

Work is continuing on the desoxyribonucleic acid from pneumococcus

Type III.

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orifice meter carefully calibrated. After the studies have been completed on the filter, the bags will be treated with fine asbestos in an attempt to improve their efficiency still further. Air sampling within the beryllium shop is continuing with no results above permissible levels being obtained. Group CMR-2 is expanding its work on beryllium and it has been necessary to set up sampling equipment in two new rooms in the new CMR Building for this work. Since no high samples have been obtained at CMR-2's existing installations, the samplers there will be run for an entire week before changing filter papers. A small amount of beryllium work carried out at DP West was also investigated.

2. Arsenic and (old) Lithium:

The filters in M-1 Building had become excessively loaded with lithium hydride and have now been changed. Numerous conferences were held and plans discussed for the new filter system to be installed at M-1 Building to prevent the escape of arsenic which will soon be incorporated in the lithium hydride. Fabrication operations on lithium hydride and arsenic in Sigma Building are being followed closely. A member of the Group participated in another conference on plans for the new press building where these materials will be handled under carefully controlled conditions. Two new atomizers for use with the flame photometer were tested on lithium analyses. Because the work on lithium is increasing and will continue indefinitely, it now appears that it may be necessary for the Group to purchase a flame photometer rather than use the old instrument at the Medical Center which is available only intermittently.

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by authority of _____, R. D. A.,

3. Germanium Hydride:

Per _____
(Authority of _____, R. D. A.,)

This new material is soon to be manufactured at Ten Site and will
(Signature of _____, R. D. A.,)
be handled in the new CMR Building and at the Nevada Proving Ground. A survey of the very scant literature on this subject seems to indicate that it is

highly toxic. A self-contained breathing apparatus has been recommended for use whenever the material is handled. Since operations are carried out in completely enclosed apparatus, the chief hazard appears to be that of breakage or actual leakage. The possibilities of incorporating an odorous warning agent in the gas have been discussed with T-Division. The Laboratory Section is investigating possible methods of analysis for this material.

4. Large quantities of toluene have recently been used in Gamma Building by W-3 Group. Measurements of air concentrations there showed levels well above permissible values and recommendations have been made to install an exhaust hood to eliminate this hazard. Toluene is also being used to clean screens at S Site in S-45B. Here, too, recommendations have been made for the use of a hood.

5. Anthracene:

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This material is now being used as an additive at S Site and recommendations have been made and are being followed that appropriate protective equipment be worn.

6. Mercury:

Members of the Group have been participating in conferences relative to the large quantity of contaminated mercury to be pumped from the Fast Reactor at Omega Site. Since this material is contaminated with plutonium, it appears that the plutonium hazard is much more serious than that of the mercury vapor. Studies on this problem will continue since the operation itself will be carried on for several months.

7. Miscellaneous Materials and Operations:

Yttrium, acetone and a number of other materials as well as such operations as swedging, vacuum cleaning and other operations were also investigated during the month.

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Dr. Leslie Silverman of the Harvard School of Public Health

visited the Group for three days and gave assistance on problems relating to air cleaning and air sampling.

B. Statistical Summary:

1. Air samples collected or field tests made for:

| | |
|-----------------|----|
| Beryllium | 58 |
| Lithium hydride | 5 |
| Oralloy | 2 |
| Toluene | 8 |
| TNT | 4 |
| Normal Uranium | 2 |

2. Calibrations:

| | |
|---------------|---|
| Filter Queens | 4 |
| Rotameters | 2 |

3. Plans approved.

4. Analyses completed:

Air:

| | |
|-----------|----|
| Beryllium | 54 |
| Lithium | 37 |
| Uranium | 30 |

Biological (urine):

| | |
|---------------------|-----|
| Cadmium | 2 |
| Lead | 8 |
| Mercury | 4 |
| Plutonium | 90 |
| Polonium | 219 |
| Porphyryns | 3 |
| Radiometric uranium | 11 |
| Tritium | 72 |
| Uranium | 29 |

VII. GROUP H-6, RADIOLOGICAL PHYSICS (T. N. White):

A. Special Problems Section (S. Shlaer, H. I. Israel):

1. General Remarks:

a. S. Shlaer was on vacation from the afternoon of December 18 to the morning of December 29, inclusive.

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Per [Signature]
(Person or organization) (Date) 1/19/50
By [Signature]
(Signature of person making the change, and date)