

H-DIVISION PROGRESS REPORT

July 20 - August 20, 1954

REF: H- 200

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

A. General Remarks:

None.

B. Personnel (8/1/54 - 9/1/54)

1. New Hires:

8/6	TRUJILLO, Adiopoldo	H-4	Administration
8/13	ORTIZ, Leopoldo	H-4	Administration
8/13	MARTINEZ, Roman	H-4	Administration
8/13	ALIRE, Jose M.	H-4	Administration
8/13	LOVATO, Juan	H-4	Administration

2. Terminations:

8/1	KOHR, Kenneth C.	H-4	Organic Chemistry
8/13	DASHENO, Marie A.	H-2	Hematology
8/13	FOREMAN, W. Wayne	H-5	Laboratory (SUMMER)
8/16	DUBE, Reginald R.	H-DO	Property
8/19	WOODRUFF, Phillip H.	H-DO	Property (SUMMER)
8/24	DAVISON, Helen I.	H-4	Biochemistry (SUMMER)
8/27	SMITH, Rita R.	H-4	Radiopathology
8/27	SCHIAVONE, P. R.	H-6	Field Tests (Deceased)

3. Total Personnel:

SM	48
Military	3
RA	14
SCP	80
Military	1
ASC	30
TOTAL	176*

*This total includes 9 summer employees and 3 casuals.

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II. GROUP H- MONITORING (Dean J. Meyer):

A. General Remarks:

1. Jerome Dummer left for monitoring service at Inyokern, California, on July 22 and returned on August 7.
2. GMX-5 experiments were successfully carried out in Bayo Canyon on July 31 and August 5. Incidents of an unusual nature took place on July 31 when Don Mueller was inadvertently exposed to the RaLa source at close quarters while opening the Freon gas valve and received .32 r. The source had been left out of the H. E. On the same day, Horace Gamble became rather heavily contaminated. It is not known exactly how or when he contracted the contamination. Continued scrubbing reduced the level in his hair to 5 mr/hr, chin to 4 mr/hr, and fingers to 9 mr/hr.
3. The demolition of N-Building was initiated and completed during this period without incident.
4. An alpha ground survey was conducted at R Site in conjunction with H-5 which was monitoring for beryllium. An average count of 300 c/m with spots of metal reading as high as 2000 c/m was detected. Air samples carried out by H-5 will help to determine whether any type of respiratory protective equipment is necessary for the grader operator.
5. A preliminary investigation has been begun on the quantitative measurement of surface contamination in terms of curies with a G. M. instrument.
6. Film holders have been prepared for the fallout measurements following the Bayo detonations.
7. An effort was made to withdraw the present RaBe source located the Omega water boiler and test it for radon leakage. In order to accomplish this Group P-2 is now considering procuring a SbBe source for replacement. This plan does not materialize, they will substitute with a RaBe source of equal size.

The safety rules prepared by this Group in conjunction with the Department of Supply and Property on the shipment of tuballoy turnings were reviewed by the National Lead Company (to whom the turnings are shipped for recovery) and received their general approval.

In collaboration with Group H-5 the facilities of the tuballoy shop were reviewed with the Shops and Engineering Departments and recommendations made for substantial changes in the arrangement of existing facilities.

The functions of the GMX Firing Site Safety Committees were expanded to include inspections of shop and laboratory areas of the firing sites. Plans are being made for a safety committee for GMX-3.

Special safety rules were written for electro-plating shops and incorporated in existing manuals.

Collaborating with Groups H-1 and H-5, a procedure was worked out with W-1 on disassembly of components of special weapons with particular scrutiny given to the problem of the presence of pyrophoric hydrides.

A review was made of the development work involving high pressures being engaged in by W-1.

A review was made of the preliminary plans for the new radiochemistry building and the new graphite warehouse.

IV. GROUP H-4. BIOMEDICAL RESEARCH (Wright H. Langham):

A. General Remarks:

E. C. Anderson participated in a course on Basic Radiochemistry at Purdue University July 19-25; four lectures and a demonstration of the determination of body water volume with HTO were presented.

Wright Langham took a trip to Randolph Field and the University of Texas at Austin to observe the operation of a monkey colony and to co-ordinate joint research proposals between Randolph Field School of Aviation Medicine and Group H-4, LASL.

properties of chlorpromazine or the probable intermediates for its preparation. In order to synthesize 2-chlorophenothiazine, which may be converted to chlorpromazine by known procedures for similar compounds, 3-chlorodiphenylamine was prepared and heated with sulphur. Infra-red analyses of crude and of recrystallized product indicated a mixture of the two possible isomers (2- and 4-chlorophenothiazine) predominating in the desired isomer.

f. Organic Syntheses with Isotopes. (Murray and Williams):

Work on the preparation of the book ~~manuscript~~ ^{has continued} and a first draft is now about 95% complete. ~~OFFICIAL USE ONLY~~

V. INDUSTRIAL HYGIENE GROUP, H-5 (H. F. Schulte)

A. Beryllium

The Beryllium Shop began operations again on August 2 with two operators and a total of 74 air samples were collected. None of these was over permissible levels.

At R Site, beryllium-TNT combinations were fired on two occasions. An air sample was collected at the bunker and soil samples were collected at the firing site before and after firing. Since beryllium was found in the soil samples, another air sample was collected during operation of a bulldozer on the site. No beryllium was found in the air-borne dust from this operation or in the sample collected at the bunker.

B. Uranium

Both normal and enriched uranium were subjected to impact extrusion in Sigma Building, Room 22. Air samples were collected on all operations and a detailed study was made during the extrusion of enriched uranium. As a result of careful operation and well-designed local exhaust ventilation, it was possible to conduct the extrusion of enriched uranium without producing excessive exposures. Information on this operation has been sent to Oak Ridge Laboratory

where further work of this nature is being planned. When the exhaust ventilation was not used during extrusion of normal uranium, air samples indicated high concentrations of uranium showing that ventilation must be used on this operation.

Air samples were also collected during deep drawing of normal uranium sheets. No excessive concentrations of uranium were produced.

Efficiency tests were made on the bag filters at TU Building after the bags had been coated with asbestos floc. Results of 26 air samples collected indicate that the floccing process has significantly increased the collection efficiency of the bags.

A number of conferences have been held with the Shops and Engineering Departments relating to plans for improved ventilation, heating and housekeeping in the Tuballoy Shops.

Several conferences have also been held with members of CMR-6 and other interested parties regarding uranium work outside Los Alamos. It is anticipated that a large job will be done at the Haynes-Stellite Company in Kokomo, Indiana, and probably a member of Group H-5 will be present during this operation. Rolling operations are also being planned at the Rodney Metals Plant in New Bedford, Massachusetts. Since this plant carries its insurance with the Liberty Mutual Insurance Company and the director of industrial hygiene for that company, Dr. Charles R. Williams, is a consultant to Group H-5, it is hoped that health supervision can be obtained through the insurance company. Deep drawing of uranium will be done at the Bendix Plant in Kansas City, Missouri. This company has had previous experience with uranium and the work here on deep drawing indicates that the health problems are comparatively minor.

C. Anthracene and TNT

[REDACTED] collected for anthracene and TNT samples

collected at the same time were also low in spite of the fact that buckets and the kettle are being steam cleaned in these bays.

~~An inspection~~ of the 132 machining line at S Site revealed visible TNT on the walls of six of the twenty-four bays. Previous studies on machining operations have always shown extremely low concentrations of TNT. As a result of these recent observations, it is planned to make a detailed study of concentrations in these machining bays.

D. Toluene:

Air samples were collected for toluene during the mixing of rubber bonded RDX by GMX-2 Group and showed that the concentration does not exceed tolerance levels during the evaporation of the solvent. Air samples were also collected at a bunker in Bayo Canyon used by GMX-5. Concentrations were high enough to warrant exhaust ventilation and a work order has been submitted for this job.

E. Thorium Oxide

Air samples were collected in Sigma Building during sintering of 10 kilograms of thorium oxide. A high concentration of alpha emitting products was obtained but this decayed rapidly and was apparently thorium B and thorium X. The concentration of thoron represents an unknown quantity which could not be determined from these figures. On future operations of this type, the sampling apparatus developed by Group H-6 will be used since a ^{TA-1} ~~partial~~ evaluation of all significant constituents.

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F. Oxides of Nitrogen

An operator in the Decontamination Section of Group H-1 received a heavy exposure to oxides of nitrogen during a decontamination operation involving the use of aqua regia. Although the work was carried out in a hood, ventilation studies indicated that the hood ventilation was completely inadequate. A report on necessary improvements in this equipment is now being prepared.

G. Graphite

Three air samples were taken during machining operations in the

404
this rate of sampling will fall off with the completion of the C-building demolition project.

L. Welding and Soldering

A survey was made of ventilation facilities for welding and soldering in ten of the outlying site shops. A report has been submitted listing recommendations for improvements in each of these shops; these recommendations already are being carried out at TA-39 and it is hoped that improvements in the other shops will follow.

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M. Noise

The noise problem in W-5 Building at Pajarito Canyon was resurveyed during Dr. Williams' stay at Los Alamos. ^{BY} Very high noise level readings were obtained and personnel protective equipment was recommended. Such equipment has been obtained and is now being used.

N. Ventilation

During the course of an industrial hygiene survey, it was found that welding was being carried out at SM-30, Room 103, without ventilation while a new welding hood and blower in Room 104 is not in use. Ventilation at TA-33 where welding and lead pouring operations were found to be completely unsatisfactory due to difficulties with the fan. While corrections are now being made, these examples indicate the need for periodic ventilation inspections.

A hood check at TD Site, Building 34, resulted in recommendations for the correction of low air velocities found. Recommendations have been made and carried out for the ventilation of arc lamps in the Photographic Lab.

A ventilation inspection was made of the emergency exhaust equipment used on the Omega reactor. This inspection was made with Group H-1 for the purpose of planning permanent exhaust facilities at this reactor. At the request of the AEC Waste Disposal Group, a detailed hood study was made on all hoods in their laboratory.

before the Health Division on "Problems in Identification of Air-borne Particulates with Special Reference to Fission Product Debris."

Material concerning the instruments shown by Group H-5 at the recent Instrument Symposium in Ann Arbor, Michigan, is now being assembled for inclusion in the Instrument Manual to be issued by the University of Michigan.

Mr. Mont Mason, industrial hygienist of the Mallinkrodt Chemical Company, spent two days with the Group discussing uranium problems and observing operations.

LA-1678, "A Portable Apparatus for the Determination of Tritium in Liquid Samples" and LA-1633, "The Calibration of Tritium Monitoring Devices" were published during the month.

2. Statistical Summary

1. Air samples collected or field tests made for:

Anthracene	7
Atmospheric pollution (D-Bldg.)	23
Beryllium	76
Enriched uranium	36
Graphite dust	3
Normal uranium	34
Soil samples for beryllium	6
Thorium	6
Toluene	14
TNT	5

2. Plans approved

4

3. Analyses Completed:

Air

Beryllium	67
Cadmium	4
Iron	90
TNT	2
Uranium	6

Biological (urine)

Plutonium	331
Polonium	80
Tritium	305
Uranium	308
Uranium (radiometric)	14

Miscellaneous

Beryllium in soil	6
Uranium in water	25

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