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MOUND LABORATORY
OPERATED BY
MONSANTO CHEMICAL COMPANY
MIAMISBURG, OHIO

PROCESS MEMORANDUM

January 1 - February 15, 1952

CONTROL SECTION

Personnel

Group 22

Mrs. T. A. Wotring was transferred from Group 24 effective January 7, 1952.

Mrs. F. J. Capocéfalo resigned effective February 11, 1952.

Group 24

Miss L. Simmons resigned effective January 11, 1952.

Abstract

Group 20

A total of 140 product purity determinations were made, requiring only two resamples.

An insulator type weighing cylinder was designed and is being constructed for use with the macro purity set up. Since it has less mass than the cylinders now in use, it should increase the sensitivity of the purity weighings.

The redesign of Line 2 is being drawn up. The new design increases the operating capacity of the group.

MOUND DECLASSIFICATION REVIEW	
1ST REVIEW DATE: 9/10/91	DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: AOC HADC HADD	1. CLASSIFICATION RETAINED
NAME: H. ANDERSON	2. CLASSIFICATION CHANGED TO: _____
2ND REVIEW DATE: 11/21/98	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: HADD	4. COORDINATE WITH: _____
NAME: B. Patay	5. CLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY): _____

GROUP 1
Excluded from automatic
downgrading and
declassification

Restricted Data
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Group 22

Eight hundred spent initiators are on hand pending destruction and recovery of polonium 210.

Fourteen of these items are grossly contaminated with some source of radioactivity other than polonium 210.

Group 24

Routine operations proceeded without any undue irregularity.

Group 33

The report "The Efficient Use of Polonium" is being circulated among the Division Director and the Section Chiefs, in the rough draft form.

The bookkeeping survey and efficiency study is underway in the Y Section.

The survey on the control of radioactive contamination is continuing in one of the Process lines. Recent results indicate the need for a gauntlet glove material, with a longer hood life than the rubber gloves now in use.

DETAILED REPORT

Group 20 - Electrolytic Purity Assay

Operations

Purity determinations were run on 140 products, only two products required resampling.

Thirty-three bismuth determinations were made variously for the Process Group and Messrs. Endebrock and Rawlings. In addition ten chloride determinations were made for the Process Group.

Personnel

Mrs. J. Herman was given special training on the 'T' area

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telephone switch-board. She will serve as one of the operators in the event of emergency.

EQUIPMENT AND MAINTENANCE

The Micro-Balances required no servicing this month.

Eleven holders were serviced this month. Two holders dropped foils (both foils were recovered) and one holder required a new set of tips.

A sleeve in Logac Pat was mashed slightly when in some unknown manner the sleeve moved forward into the long tube about two inches and the gate was closed on the sleeve until the gate motor stalled.

No damage is apparent to the gate, gate motor, or long tube, inasmuch as the gate and gate motor operate satisfactorily and the long tube holds the required vacuum.

The sleeve movement probably occurred because the rubber wedge on the opposite side of the sleeve to the sleeve air duct gasket came loose and no longer held the sleeve firmly in the sleeve chamber. On initial examination the rubber wedge was found lying in the back of the sleeve chamber. It was possible to retrieve the sleeve through the open end of the tube.

A tool rack was completed and installed in T-260.

DEVELOPMENT

Measurement of the Buoyancy of a Thermally-Hot Sample

In an effort to increase the response and sensitivity of the balance, a new thermal control cylinder has been designed to reduce the total balance pan load from 100 grams to about 35 grams. This weight reduction is made possible by substituting Santocel for the manganous nitrate hexahydrate salt. The cylinder is further re-designed to permit insulation of the outer cylinder cap in order to gain a more complete insulation of the inner cylinder. The drawing is complete and has been sent to the machine shop for fabrication. Mr. Pittinger's estimated date of completion: February 15.

A thorough check of the sensitivity of the balance was made at various loads from 0 to 100 grams. This information has not been rechecked since the long-wire hand-down was abandoned.

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While the sensitivity check was being run, the dehumidifier in the hood air supply system lost its refrigerant resulting in an 8° C rise in temperature. This unit was recharged by the Engineering Department and the hood equilibrium was re-established in 24 hours. Prior to this occurrence the air supply system had functioned continuously without incident for 88 days.

Survey of the balance weights and their decontamination was completed and they are being recalibrated on a balance in the Research Building.

At latest inquiry, February 14, fabrication of the new thermal control cylinder by the machine shop had not been started.

Proposed Methods of Expanding our Present Facilities

Work on the redesign of hood #7 for relocation of the colorimeter and design of hood #10 for a six unit stirrer continues.

Group 22 - Inventory and Sampling

The Calorimeter Research Group has completed assay of the four channels of slugs as requested by the Hanford Engineering Works. Complete data is not yet available on all four channels, however one channel which Hanford had assayed at 783 curies actually calorimetered 1128 curies at Mound. Other channels in this same shipment have shown similar discrepancies based on production alpha counts. It is hoped that the Electronics Division will have completed the requested installation of the Radet Counters in the Concentration Cells in time that full advantage can be taken of these 228 calorimetered slugs in the calibration of the Counters. One such counter has been installed but needs modification of the registering dial to permit a more accurate reading. The present dial is too small to permit reading to within the desired precision. In addition to the counter already installed, another is being built; the two counters will provide an assay of the material after the jackets have been removed, and an assay of the material as it is ready to leave the Concentration Cells. If these instruments prove to be satisfactory, others will be used at appropriate stages in the process lines.

All of the more than 800 spent initiators received to date from Los Alamos have been checked by the Health Physics Division for surface contamination. Thirty-four of the items proved to be contaminated, and we have already been informed by Los Alamos that such contamination may be Po 210, U 235, or Pu 239. Since the contamination level as determined at Mound Laboratory in February 1952 agrees closely with the level as determined at Los Alamos in the summer of 1951, the suspicion grows that the contamination is not Po 210. This poses a

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problem regarding disposition of the solutions which will presumably be used for decontamination of the items; arrangements have been made with Mr. McEwen to deliver these to the "R" Building for introduction into the evaporator in use in that area for final disposition. Preliminary efforts at decontamination have not been too successful and it appears now that fourteen of the items will not come down to the level where they can be introduced into the lines of the Operations Division for recovery.

One hundred eighty-five pounds of bismuth was salvaged from cold slugs used in the development of the mechanical decanner. The material is being held for use by Mr. McEwen's group. At the same time, 37 jacketed cold slugs were found in prime condition; these have been returned to stock.

The calculators and typewriter in use in T-311 in September 1950 at the time of the serious spill in that area have been checked and found to have direct readings of about 30,000 counts. Efforts are being made to decontaminate them so they may be returned to service.

The calorimeter used for solution assay has been returned to the "R" Building for necessary repair. This will preclude any work on crosscheck of counting instruments by the Inventory Group until it is replaced.

The Inventory Group has been informed by the Atomic Energy Commission office that a precious metals audit will be held beginning February 25. Mr. Harry Lee who supervised the audit last year will again be in attendance.

On January 21, Mr. Frank Hils severely cut his right hand while attempting to open a stuck locker belonging to Mr. Jack Wineka. He spent a week in the hospital and has been absent from work through February 15.

Group 24 - Calorimetry and Counting

Calorimetry

The operation of both counting and calorimetry equipment was generally satisfactory. One P-type gamma counter required the replacement of its G.M. tube twice during this period. Ordinarily, the G.M. tubes received recently have had a longer life than this would indicate. Hence it is probable that the two tubes involved were defective. Voltage curves have been run on all spare B-wall tubes. It was found that the servicing of calorimeter #8 would necessitate the complete disassembly of the instrument. Accordingly, the instrument

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was turned over to the Calorimetry Research Group for complete overhaul. It is estimated that this work can be completed and the calorimeter returned in about two weeks.

In addition to our regular production work, assays made for other groups during the period were as follows:

<u>No. Assays</u>	<u>Type Sample</u>	<u>For Group</u>
2	Production Gauge	Neutron Source
3	Production Gun	" "
6	Production Strip	" "
17	Neutron Source	" "
1	Production Gauge	Group 6

Counting

The short tube Logac standards were crosschecked against the Electronic Section's standard chamber. The results are in excellent agreement.

Group 33 - Special Problems

A rough draft of the Bookkeeping Survey was prepared this period. Two reports, "A Modified Polonium Process" and "The Efficient Use of Polonium", were submitted for the consideration of the Division Director and the Section Chiefs, both reports are in the final rough draft form.

The survey on methods of acquiring more control over radioactive contamination is continuing. The work this period was primarily confined to applying specific recommendations in P and E line #3 (T-269 and T-270). The recommendations consist of 1) Reducing the frequency of gauntlet changing; 2) Confining gauntlet changing, except in emergencies, to 8:00 a.m.; 3) Limiting the frequency of opening hoods to the high risk area; 4) Washing down T-269, the high risk corridor for line 3. In addition a log of line 3 activities is being kept and will be correlated with air counts for the two rooms. A daily inspection of the gauntlet gloves has revealed that the failure of the gloves might be a serious problem. In some cases the hood life of gloves was only 24 hours. Correspondence was initiated soliciting various glove manufacturers for test samples. It is planned to test plastic and

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and rubber gloves and some consideration is being given to fabricating unichrome as a substitute for our present gauntlet gloves.



P. J. Lowry

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- Copy 1 - Mr. E. C. McCarthy
- 2 - Mr. P. J. Lowry
- 3 - Central Files
- 4 - Central Files

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