

March 9, 1972

Atlantic Richfield Company
ATTN: Dr. Adolf I. Snow
Chairman, Radioisotope Committee
400 East Sibley Boulevard
Harvey, Illinois 60426

License No. 12-00140-04

7201

Gentlemen:

Thank you for your letter dated March 7, 1972, informing us of the steps you have taken to correct the item of apparent noncompliance which we brought to your attention in our letter dated February 18, 1972. We will examine this matter during our next inspection.

Your cooperation with us is appreciated.

Sincerely yours,

Boyce H. Grier
Regional Director

bcc w/ltr dtd 3-7-72:
G. W. Roy, CO (2)
L. Kornblith, CO
R. H. Engelken, CO
CO Files
PDR
NSIC

316

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|-----------|--------------------------|------------------------|------------------------|--|--|--|
| OFFICE ▶ | CO:III <i>Schultz</i> | CO:III <i>Allan</i> | CO:III <i>Grier</i> | | | |
| SURNAME ▶ | Schultz | Allan | Grier | | | |
| DATE ▶ | 3-9-72 | 3-9-72 | 3-9-72 | | | |



March 7, 1972

U.S. Atomic Energy Commission
Division of Compliance
Region III
ATTN: Mr. Boyce H. Grier,
Regional Director
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Gentlemen:

This letter is in reply to your letter to me of February 18th which refers to certain activities under our AEC Byproduct Material License No. 12-00140-04 which appeared to be in non-compliance with certain AEC regulations on the inspection conducted by Mr. W. H. Schultz of your office on February 4, 1972.

Compliance with AEC regulations has been and will remain our policy. We are strengthening safety procedures to insure that we remain in compliance with all pertinent regulations.

At a recent test in Philadelphia, as you are aware, representatives of the City of Philadelphia noted certain violations of procedures. On notification of this violation, I issued on February 7, 1972, the attached letter entitled "Operations Involving Radioactive Materials", reminding all personnel concerned of various safety factors and including Item 8 which requires sending to me a xerox copy of notebook records after each field trip to insure that these designated procedures were followed.

In the past, we have considered bio-assays applicable where large amounts of tritiated water have been handled, but have not felt that it was necessary for tritiated hydrocarbons because there is some question that these hydrocarbons will wind up in the urine. Nevertheless, in the future, we shall have bio-assays conducted by New England Nuclear or equivalent vendor any time over 100 millicuries of tritium is used in any form.

In regard to particulate contamination, we shall place an order for an air sampler of the type shown in the attachment or equivalent for air monitoring. In regard to tritium in the air, we shall make use of a squeeze bulb which will draw the air through liquid scintillator solution so that an analysis may be performed. In regard to time of implementation, the orders in my letter to personnel of February 7, 1972, are in effect now. Except for the purchase of equipment indicated, all corrective measures are now in effect. In the event a test where air-borne particulates must be measured is carried out in advance of the arrival of the instrument listed, other equipment will be used.

MAR 8 1972

Mr. Boyce H. Grier
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In many of the tests which we have carried out, our radioactive material was in a metal container attached directly to a refinery unit with a pressure fitting so that leakage and air-borne contamination is extremely unlikely. External surveys are taken of injection of the tracer and any tracer remaining in the injection apparatus and piping after injection is noted. Unfortunately, these surveys have not always been recorded. This procedure will be remedied.

We have chosen, where applicable, short-lived tracer, such as Gold-198 with 2.7 day half life, so that radioactivity levels at any point will rapidly decline. In the test at Philadelphia, radioactive powder was prepared at the refinery site and transferred to the injection equipment at the site. It was in one of these tests that contamination was found by a Philadelphia Health Department Inspector. We intend in the future to use the procedure of preparation at a field site as infrequently as possible to avoid possible contamination by air-borne powder. In the work at Philadelphia, tagged powders were prepared in areas with appropriate warning signs but not absolute isolation.

In other work involving Gold-198, the tracer is used in a partially polymerized, viscous and rather sticky oil. Tests have shown that this material has an undetectable vapor pressure at 700°F. under vacuum conditions. Because of these properties, air-borne surface contaminations are extremely unlikely. Contamination on surfaces because of contact is, of course, possible, but is relatively easy to keep track of by means of wipes. Our procedure and check procedure shall insure wipes are used in all future tests. We shall conduct surveys for air-borne contamination regardless of the likelihood of contamination. The personnel involved will be reminded again that all readings are to be recorded and that zero readings are pertinent.

A favorable factor is that film badges were used in all tests with the results shown in the table below:

Maximum Film Badge Readings

Biweekly (Milliroentgens)

| <u>Year</u> | [REDACTED] | [REDACTED] |
|-------------|--|------------|
| 1965 | 20 | 60 |
| 1966 | 30 | All M |
| 1967 | All M | All M |
| 1968 | All M | All M |
| 1969 | All M | 30 |
| 1970 | 50, 25, 80, 70, 30, 30, 20, 20, 10, 10, 20 | 30, 20, 30 |
| 1971 | * 30, 60 | 50, 60 * |

Exemption 6

Note: M readings are less than 10 milliroentgens.

Mr. Boyce H. Grier
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Exemption 6

These readings are for two-week periods. The fact that any readings were obtained at all indicates that the badges were worn. Since [REDACTED] get much closer to radioactive material than any other personnel, it may be seen that external gamma exposures are kept low.

We would like to assure your office that we intend to comply with all pertinent regulations. We have conducted radioactive operations for many years in the past in a safe manner. We appreciate the safety reminders presented to us by both the Philadelphia authorities and your office and will tighten our procedures as indicated. We trust that the discussion above is responsive to the questions raised in your letter. I will be pleased to discuss any of these points or others in more detail if you so desire.

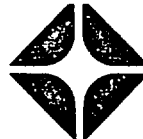
Yours very truly,

ATLANTIC RICHFIELD COMPANY

A. I. Snow

A. I. Snow,
Manager - Physical Research

AIS:msk
Enclosures



Date: February 7, 1972
To: Physical Research Personnel
From: A. I. Snow
Subject: Operations Involving Radioactive Materials

The following procedures are to be applied without deviation to all activities involving radioactive materials. These procedures are a reaffirmation of past requirements.

1. Incoming Radioactive Shipments

A notebook record is to be made of (a) external radiation and (b) amount of removable contamination on shipping container surfaces for all incoming shipments without exception, either received at Harvey or in the field.

2. Safety Devices

Gloves, long handle tongs, etc., should be used to minimize exposure and contamination.

3. Movements of Radioactive Materials

On moving radioactive materials, all possibly breakable equipment, such as glassware, should be contained inside a non-breakable container so that if the glass, etc., is broken, radioactive material is not spread.

4. Personal Monitoring

Clothing, hands, etc., of those working with radioactive materials should be frequently monitored with appropriate survey meters.

5. Area Surveys

At conclusion of work, all pertinent areas should be monitored for external radiation and removable contamination determined by use of wipes and appropriate survey meter. A notebook record should be made of all determinations whether positive or negative.

6. Film Badges should always be used.

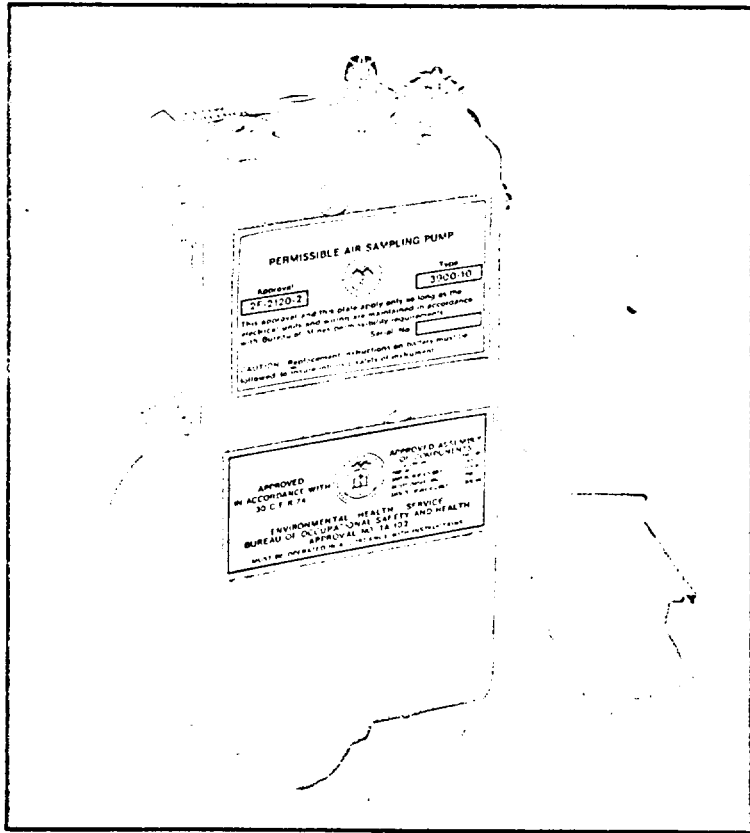
7. Areas should be wiped off to prevent exposure to non-participating bystanders. Contaminated areas containing short lived radioactive material can be isolated by roping off with appropriate warning signs until radioactive decay makes the area safe.

8. Reporting - After each field trip a xerox copy of the notebook records containing the information described above should be sent to me.

A. I. Snow

AIR SAMPLERS

925



SPECIFICATIONS

PUMP UNIT

- Dimensions The overall dimensions of the pump unit are 6 1/8" H x 3 1/4" W x 2 1/2" D.
- Weight 18 ozs.
- Construction and Protective Features The case is constructed from a high impact resistant ABS plastic. Dust entry into the case is prevented by means of a vinyl gasket and, by exhausting the pump into the case to maintain a slight positive internal pressure

CONTROLS

- Switch Pump unit has an on-off switch on outside of case. The switch is protected against dust entering the mechanism, and, against accidental stopping or starting by the use of a screw-on dust cover.
- Flow Rate Adjustment To prevent accidental change of adjustment, the flow rate adjustor is recessed and requires use of an adjusting tool.

PERMISSIBLE AIR SAMPLING PUMP
 MODEL NO. 952-965

FEATURES

- o Long-life Trouble-free Piston Pump, Capacity to 2.5 Liters/min.
- o 8 Hour Continuous Operation with Rechargeable Nickel Cadmium Batteries.
- o Comfortable, Lightweight Design May Be Worn All Day to Monitor the Breathing Zone
- o Extremely Rugged, High Quality Construction. Approved and Specified by Major Government Agencies. Extensive Self-protection Features.

DESCRIPTION

Dust, generated by almost every manufacturing operation, ranges upward from submicron sizes. In this range, particles over 10 microns are regarded as less harmful to health than the fine particles 10 microns and smaller. Coarse dusts are propelled from the upper respiratory passages to the throat, and are swallowed or expectorated. Fine dusts penetrate to the lower lung, where they can remain for months or years. The 952-965 Sampler measures the operator's exposure to hazardous dusts for determination of protective measures. The 952-965 Air Sampler can be worn by the workman on the job, and monitors the worker's actual breathing zone during a working period.

The 952-965 Air Sampler is safe for use in explosive atmospheres such as coal dust. It is equally suitable for the monitoring of industrial air pollutants such as lead, asbestos, and natural and synthetic fibers.

Lightweight and easy to wear, this modern dust monitor goes everywhere with the operator. It draws a continuous sample of the air in his breathing zone, captures its respirable dust content, and preserves the fine dust particles on a filter disc for subsequent analysis. The Air Sampler is battery-operated from a self-contained rechargeable power pack. It is the smallest and lightest unit available and will provide 8 hours of continuous sampling. With its field-proven piston pump, the Air Sampler is also the most dependable accurate instrument in operation requiring minimum re-calibration or other routine adjustments.



BAIRD-ATOMIC, INC., 125 Middlesex Turnpike, Bedford, Massachusetts 01730 Tel. 617-276-6000
 Sao Paulo, Brazil • Braintree, Essex, England • The Hague, Holland

AIR SAMPLERS

PERSONAL AIR SAMPLER
MODELS 952-965 COMPLETE

SPECIFICATIONS

- Battery Characteristics** Power supply is a removable 3.75V, 1 amp-hour nickel cadmium rechargeable battery located in pump case. Battery pack contains current limiting resistors to protect against accidental short circuit destruction of cells. Miniature jack connection provides for charging battery in or out of case.
- Battery Performance** With fully charged battery, pump is capable of operating for more than ten hours at a rate of 2.0 liters per minute against resistance of four inches of water measured at inlet of pump.
- Pulsation** Piston type pump has minimum frequency of 20 Hz.
- Belt Clips** Pump unit is provided with spring belt clip for suspension from the operator's belt.
- Flow Rate Indicator** A flow meter is provided as an integral part of pump unit, calibrated within five per cent at 2.0, 1.8 and 1.6 liters per minute.
- Flow Rate Range** Pump is capable of operating continuously for 8 hours over a range of from 1.5 to 2.5 liters per minute and is adjustable over this range by means of its control valve.

BATTERY CHARGER

- Power Supply** 117 Volt 60 Hz power line.
- Connector** Cord and polarized connector to charging inlet on pump or battery case.
- Safety** Supplied with fuse and grounded power plug. Not susceptible to damage when operated without a battery on charge.
- Charging Rates** Charger will operate at either 16 hours or 64 hours charge rate. Safety feature: will not overcharge a discharged battery in sixteen hours when operating at the sixteen hour charge rate or in eighty-eight hours when operating at the sixty-four charge rate.

DESCRIPTION

SAMPLER PUMP: The 952-965 piston pump is more efficient than the best diaphragm type. Over three years of field testing and development have gone into this instrument. It is calibrated to within $\pm 5\%$ flow rates of 2.0, 1.8 and 1.6 liters per minute in accordance with U.S. Bureau of Mines and Bureau of Health, Education and Welfare specifications. The flow rate range is from 1.5 to 2.5 liters/min. and is adjustable over the range. Consistency over eight hours is ± 0.1 liters/min. when the pump is operated at 2.0 liters/min. Pump piston and sleeves are impervious to corrosion-producing gases, dusts and vapors. Total weight is 18 oz. complete with battery pack. Battery pack can be charged in or out of instrument by the charger provided.

MODELS

952-965 Complete sampler consists of 952-963 pump, Ni-Cad batteries and recharger, 952-974 hose and lapel clip, 952-329 reusable filter head and 952-110 Whatman 41 1" filter paper, 100/pkg, for the 952-329 filter head.

Also available on special request:

Complete air sampler designed specifically for lung-equivalent air sampling consisting of the pump, batteries recharger, precision nylon cyclone gravimetric filter head, 12 replaceable filter cartridges and attache/carrying case.

Other sampling devices such as bubblers & impingers to be used with the basic 952-963 pump system.

