

THE ASSOCIATED ETHYL COMPANY LIMITED

ARTILLERY HOUSE, ARTILLERY ROW, LONDON, S.W.1

Telephone: ABBEY 3974

Telegrams: ETHYLPORT, SOWEST, LONDON

OUR REF. JES/-

YOUR REF.

20th July 1951

Dr. R.A. Kehoe,
University Of Cincinnati,
College of Medicine,
Eden Avenue,
CINCINNATI, U.S.A.

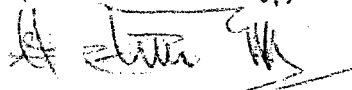
Dear Bob,

I think you will be interested in reading the attached letter from Jack Datchelor and the interim report of the Defence Research Laboratories in Australia on some used canisters supplied by R.P.M. from Pladju, Sumatra.

We will send you a copy of the further report from D.R.L. on the canisters supplied by Abadan.

I do not know what your views are regarding the possibility of extending the life of canisters, but it would appear from the tests which have been made by D.R.L. that we could easily double it and still maintain an ample margin of safety.

Yours sincerely,


C.L. RISSO-GILL

CIRG/jmc

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368 COLLINS ST.,
MELBOURNE CI

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3rd July, 1951.

Operations Department,
The Associated Ethyl Co. Ltd.,
Artillery House,
Artillery Row,
London, S.W.1.

Dear Sirs, Attention: Mr.C.H.Noble

Attached is an interim report from the Defence Research Laboratories following the examination of some used canisters sent to us by B.P.M. from Pladju, Sumatra.

It was suggested in your letter SBC/- of the 28th November 1949, that the maximum concentration of T.E.L. likely to be encountered at a blending plant is 20 mg. of lead per 10 cubic metres of air. As you will see from the report, the canisters were effective at a concentration of 15 mg. of "Ethyl" fluid per litre of air.

On a rough calculation this indicates that the canisters are effective against T.E.L. at a concentration about 7,500 times as great as could be expected in actual practice. It also appears that this particular type of canister is capable of adsorbing 300 gms. of "Ethyl" fluid or, say, 120 gms. of lead as T.E.L.

According to our calculations, which have been checked by the D.R.L., these canisters should be effective for 20,000 hours continuous use in an atmosphere containing 20 mg. of lead per 10 cubic metres of air and at the fast breathing rate of 50 litres per minute. This is equal to 2.3 years life in continuous use.

Under actual conditions in blending plants the possibility of an individual canister being used for more than 6 hours per day, 7 days per week, is so remote as to be discounted altogether. This would represent 2,184 hours per year or a maximum life of about 9 years under such conditions.

From these tests it appears that we could either:

- (1) Double the life of the canisters, viz., 200 hours or 12 months, whichever comes first. This would provide a factor of safety of 10 against the worst possible conditions ever likely to be encountered.

or (2) Adopt 250 cc. canisters and keep the life as at present.

We expect to receive a further report from D.R.L. on some canisters sent from Abadan but anticipate that these results will only serve to confirm

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Operations Department

3rd July, 1951

the previous findings. Untimately D.R.L. will submit a comprehensive report on their work and this should provide valuable data, not only to ourselves, but to the industry as a whole.

Yours sincerely,



J. E. BATCHELOR.

Encl.

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CHEMICAL DEFENCE SECTION - DEFENCE RESEARCH LABORATORIES -
MARIBYRNONG

INTERIM REPORT ON EXAMINATION OF RESPIRATOR
CANISTERS USED IN "ETHYL" BLENDING OPERATIONS

INTRODUCTION

Four respirator canisters were received for examination from the Associated Ethyl Co. Ltd., after use in "Ethyl" blending operations in Pladju, Sumatra.

The canisters were M.S.A. Supersize Type G.M.A. manufactured by Mines Safety Appliances Co., Pittsburg, U.S.A., and were approved by the U.S.A. Bureau of Mines for use against organic vapours. They are labelled as follows:

No. 1 Canister, used 2/5/50 - 2/7/50, 2 months (4.05 hrs)
No. 2 Canister, used 5/5/50 - 5/7/50, 2 months (9.05 hrs)
No. 3 Canister, used 5/5/50 - 5/7/50, 2 months (5.20 hrs)
No. 4 Canister, used 20/4/50 - 20/6/50, 2 months (14.20 hrs)

APPEARANCE

The canisters were plugged and in good condition.

EXPERIMENTAL

Each canister was radiographed as received. They were then treated as follows:-

No. 4 - The contents were divided into 5 layers which were separately analysed for lead and ethylene halide. Other characteristics of the charcoal were determined.

No. 3 - Air was passed over 1 gm. of "Ethyl" fluid at 60°C and then through the canister at a normal breathing rate of 16 litres/min. until the fluid had completely evaporated. The container was again radiographed and the contents analysed as above.

No. 1 - 50 gm. of "Ethyl" fluid in two lots of 25 gm. were fed to the canister in air at 16 litres/min., the average concentration of "Ethyl" fluid vapours being 15mgm. per litre. The canister was radiographed after each 25 gm. addition and finally analysed as above.

No. 2 - Based on the figure obtained for the charcoal from canister no. 4, the moisture content in this canister was raised an additional 12% by drawing through it a humidified air stream. After standing to allow of equilibration of moisture in the charcoal, 30 gms. of petrol vapour were passed through the canister. This was followed by 25 gms. of "Ethyl" fluid in the manner described above. The charcoal was then layered and analysed.

In all cases where "Ethyl" fluid additions were made the effluent air was sampled and examined for lead.

RESULTS & DISCUSSION

No lead was found in the analyses of the charcoal from canister no. 4 as received, and the very small amount of halide detected was no more than commonly found in extruded charcoals of this nature. Radiographs of the canisters as received did not reveal any lead.

In the case of canister no. 1, the radiograph, confirmed by analysis, indicated that the 50 gms. of "Ethyl" fluid were adsorbed on the first one seventh of the charcoal above the influent diaphragm. There was at no time any penetration of "Ethyl" fluid through the canister. The amount to cause saturation under these conditions would, therefore, be many times this quantity. Even when the charcoal in the canister had been "wetted-up" considerably and subsequently exposed to petrol vapour, as canister no. 2, the radiograph, again confirmed by analysis, indicated that 25 gms. of "Ethyl" fluid were retained in the first 20% of the canister. There was no trace of "Ethyl" fluid in the effluent air stream.

There is no doubt, therefore, that under the conditions of exposure in which these canisters were used, their life period, for all practical purposes, would be limited only by mechanical damage or by the deleterious effect of some foreign substance. This latter should not, of course, be a serious danger if the containers are kept properly plugged at all times when not in use.