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THE ASSOCIATED ETHYL COMPANY LIMITED

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OUR REF.

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YOUR REF.

3rd July, 1944.

Dr. R. A. Kehoe,
College of Medicine,
University of Cincinnati,
Ohio.

Dear Bob,

For your information I enclose copy of a
circular letter sent out by the Shell Company to their various
organisations throughout the world. I am unable to attach the
drawing since, unfortunately, for the moment I have no copies
available.

Sincerely yours,



T. R. A. Bevan.

Original by steamer:
copy and enclosure by
airmail.

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N 7850

ENGINEERING DEPARTMENT (THE ASIATIC PETROLEUM CO.LTD)CIRCULAR LETTER
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REDUCTION OF HAZARDS IN THE FILLING AND HANDLING OF
LEADED GASOLINES

During the past year some serious cases of lead poisoning have occurred among filling shed operatives due to excessive inhalation of the vapours from leaded gasolines owing to war conditions. The conditions which give rise to these casualties have been investigated by Dr. R.A. Kehoe acting for The Associated Ethyl Company Ltd., who have - in co-operation with the Oil Companies - prepared a booklet summarising the conditions responsible for the hazards and containing recommendations for their avoidance.

Copies of the booklet are enclosed with this Circular Letter and the recommendations contained therein are to be regarded as Company regulations in all areas.

Although the casualties have occurred under the pressure of wartime conditions, there is no doubt that the precautions laid down in the booklet are necessary both now and under more normal circumstances, particularly as the use of leaded gasolines has become more general.

It is necessary to state that the hazard may arise in temperate climates if the removal of vapours is not adequate.

As regards canfilling installations, the recommendations deal with two types :

(a) Permanent or semi-permanent Installations, and

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(b) Improvised and mobile Installations.

We wish to make it clear that an improvised Installation includes any filling plant which has been installed in a building which was not built for the specific purpose of housing such a plant and which, therefore, is insufficiently ventilated. Most of the can filling plants which are being operated for the Services come into the category of "improvised".

Reference is made in the booklet to the control of the lead concentration in the air in the breathing zone of the workmen, and the method for carrying out lead determinations in air is given in the Appendix. We have arranged for the special air sampling apparatus to be sent to those areas where the Company has a Laboratory and, if other areas can arrange for this testing to be done by a qualified chemist, they will be supplied with the apparatus if the local Management considers it to be necessary.

For improvised and mobile plants it will be necessary to provide special clothing and introduce rotation of labour as laid down in the booklet if, in the opinion of the local Management the exposure to lead vapours is likely to be harmful.

As regards necessary alterations to buildings and equipment, these should be put in hand as soon as possible. The booklet states that mechanical ventilation should be of the suction type designed to remove vapours at their point of origin and, for your information, we enclose herewith two prints of our Drawing No. 88811 which show details of vapour extraction ducting as fitted to a filling machine in this country. This arrangement has proved most effective in reducing the gasoline vapour and lead content in the filling machine atmosphere.

Two main ducts are fitted to the machine, one at a level of about eighteen inches above the filling nozzles and the other just below the bottom of the tins. An inverted cup about 3" dia. is fitted to each filling nozzle in such a position that when filling, the bottom of the cup is $1\frac{1}{2}$ " from the tin top. The annular space between the cup and the nozzle is connected by flexible metallic hose to the upper duct. Light sheet metal tubes are also carried from the upper duct to the snifting valves above each pair of filling measures. These carry away any drips or vapour leaks from the snifting valves. The lower duct is fitted with open slots about 4" long by 2" wide opposite each tin and draws off any vapour that collects around the bases of the tins due to splashes and leaks.

An 18" dia. exhaust fan having a displacement of 1400 cu.ft. of air per minute, driven by a .15 h.p. flame-proof motor is fitted in the wall of the building just above ground level and the two ducts are connected to the suction side of the fan. With this set up it has been found that a vacuum of about $\frac{1}{2}$ " water gauge is maintained in the ducts. Tests with the explosimeter and lead estimations taken in the vicinity of the filling nozzle have shown that within practical limits the whole of the vapour expelled from the tins is drawn away into the duct.

This same principle with minor modifications can be applied to almost any make of filling machine whether of the weight or volume type.

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It has been found that one of the worst hazards due to gasoline vapours is caused by pushing uncapped tins along a gravity conveyor. Blobs of solder on the bottom of the tins bumping on the rollers combined with the flexibility of the sides causes a fine spray to be ejected from the filling hole. Consequently arrangements should be made to cap the tins as soon as possible after leaving the filling nozzles. If it is essential for the tins to be transported away from the filling machine before the caps are pushed in, the conveyor should be covered in and connections made to the extraction ducting to draw off the vapour caused by splashing.

If you consider that it is advisable to fix up similar arrangements in any of the filling sheds in your area and are unable to obtain suitable fans fitted with flame proof motors we can supply them from this country on receipt of your cabled advice of the sizes of fans required and the current characteristics.

For your guidance we would mention that the size of fan detailed above is suitable for a small filling shed having one twelve point filling machine.

Would you please acknowledge receipt of this circular letter and advise us briefly of the alterations which you consider it necessary to make in the operation and construction of your filling plants, so that we can obtain sanction for any constructional costs involved. If considered necessary you should cable on this point.

(Signed) E. R. CARTWRIGHT

Chief Engineer

Encls. Booklet

Two prints Drg. No. 88811.

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