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PROGRESS REPORT

TECHNICAL SERVICES DEPARTMENT

AQ. 32636

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File

TITLE: Aroclors Pollution - Waste Incineration

PERSONNEL: J.D. Humphreys (A.C. Nethercott)

PROBLEM: Control of environmental pollution by P.C.Bs. Disposal of Aroclors waste products.

SUMMARY:

A visit was made to Purle Waste Disposal Ltd. at Rainham to witness the trial incineration of selected Aroclor wastes and take samples to ascertain that no pollution could occur in the incinerator effluents. The analyses of these samples are not yet available. It is a Newport objective to incinerate all Aroclor wastes arising within the factory with the exception of still bottoms which would continue to be disposed of by toxic land fill.

At present, the incinerator system is only really suitable for handling liquid wastes but Purle are willing to undertake modifications to handle solids containing materials (filter cakes, etc.) or high melting /viscous liquids.

Purle would provide a collection service to take waste materials to Rainham. Other incinerators planned by Purle would not initially be suitable for Aroclors as they would not have scrubbers.

FUTURE WORK

1. Publish results of effluent analyses determining performance of incinerator as soon as available.
2. Policy decision on scope of waste collection from customers is needed.
3. Arrange contract, methods of collection, etc. with Purle.

MONS 056711

J.D. HUMPHREYS

DETAILS

Visit to Purle-Cunis Incinerator at Rainham (Nr. London) on March 5th. 1970

Present:

H. Pullen	Purle Waste Ltd.
T. Cunis	M.O. Cunis Ltd.
H.A. Vodden	Monsanto
J.D. Humphreys	"

This visit was arranged subsequent to discussions with Purle at Newport, to inspect their incineration facility and observe the trial incineration of selected drums of Aroclor waste

DESCRIPTION OF INCINERATION FACILITIES

The incineration plant owned by a joint subsidiary of Purle Waste and Cunis is regarded as a pilot unit. It has a nominal incineration capacity of 1 ton/hour, is of Swedish manufacture and was stated to have cost approx. £40,000. A sketch of the equipment is appended.

The combustion chamber temperature is controlled at 1250 - 1350°C by adjusting the quantity and proportion of waste material and fuel oil in the feed, and the residence time is approx. 3 secs. The incinerator body is cooled by air circulating through an external jacket, and heat input or calorific value of the feed is the limiting factor on throughput Thus when burning Newport waste, this was limited to 42 g.p.h. only 25% of the nominal capacity.

Purle have plans to establish a chain of larger scale incinerators (3 tons/hr nominal) throughout Britain and their associates, Rollins-Purl have similar plans in the U.S.A. However, the other Purle incinerators will not be equipped with scrubbers and will therefore be unsuitable for chlorine containing materials. If justified, scrubbers could be added later. Purle would initially provide a collection service from Newport and from customers as required, and incinerate all materials at Rainham.

It is necessary to consider the possibilities of environmental contamination arising after incineration. Thus discharges from the incinerator are as follows:-

1. In solids, ash, slag, etc. Normally any solids in the feed are swept out of the combustion chamber into the scrubber. There is a possibility that it may be necessary with high solids content feeds to rake out material from the combustion chamber occasionally. Any P.C.Bs would, however, be broken down rapidly under these conditions.

2. In scrubber liquors Any Aroclors which was not combusted in the incinerator would be vaporized over into the scrubber. Samples of the scrubber liquor were therefore taken during the incineration test to look for the build up of P.C.Bs. Results are still awaited.

3. In the stack discharge The height and direction of the stack discharge made it impossible to observe if the scrubber vapours were at all noxious, but they should not contain PCBs unless these are also present in the scrubber liquors.

4. In the empty drums There must be control of the disposal of contaminated empty drums, although the quantity of PCB emission in this way will be relatively small.

INCINERATION TRIAL

The following selection of Aroclor waste products was sent to Purle for incineration.

1. 3 drums HCl off-gas line drainings Typical analysis of these is 90% Biphenyl plus Aroclors with a chlorine content of 20%

2. 1 drum contaminated Pydraul This has a composition of 43% Aroclor 1242 and approx. 27% total chlorine.

3. 1 drum filter cake from the earth treatment filter This contained approximately 60% by weight of mixed Aroclors.

Only material '(1)' was ready for feeding during the visit. No problems arose during the trial incineration, but as already mentioned feed rate was limited to a maximum of 42 g.p.h. by the heat absorbtion capacity of the furnace. Slaked lime was added from bags to the scrubber liquor pond during the course of the trial to maintain approximate neutrality. \ more automatic system would be desirable.

Subsequently material '(2)' was incinerated with very similar results. The system is not equipped to handle high concentrations of solids. For this an agitated feed tank would have to be provided with an arrangement for dilution of the solids to an acceptable level. Material '(3)' was eventually disposed of by adding a little at a time to the feed when incinerating other materials.

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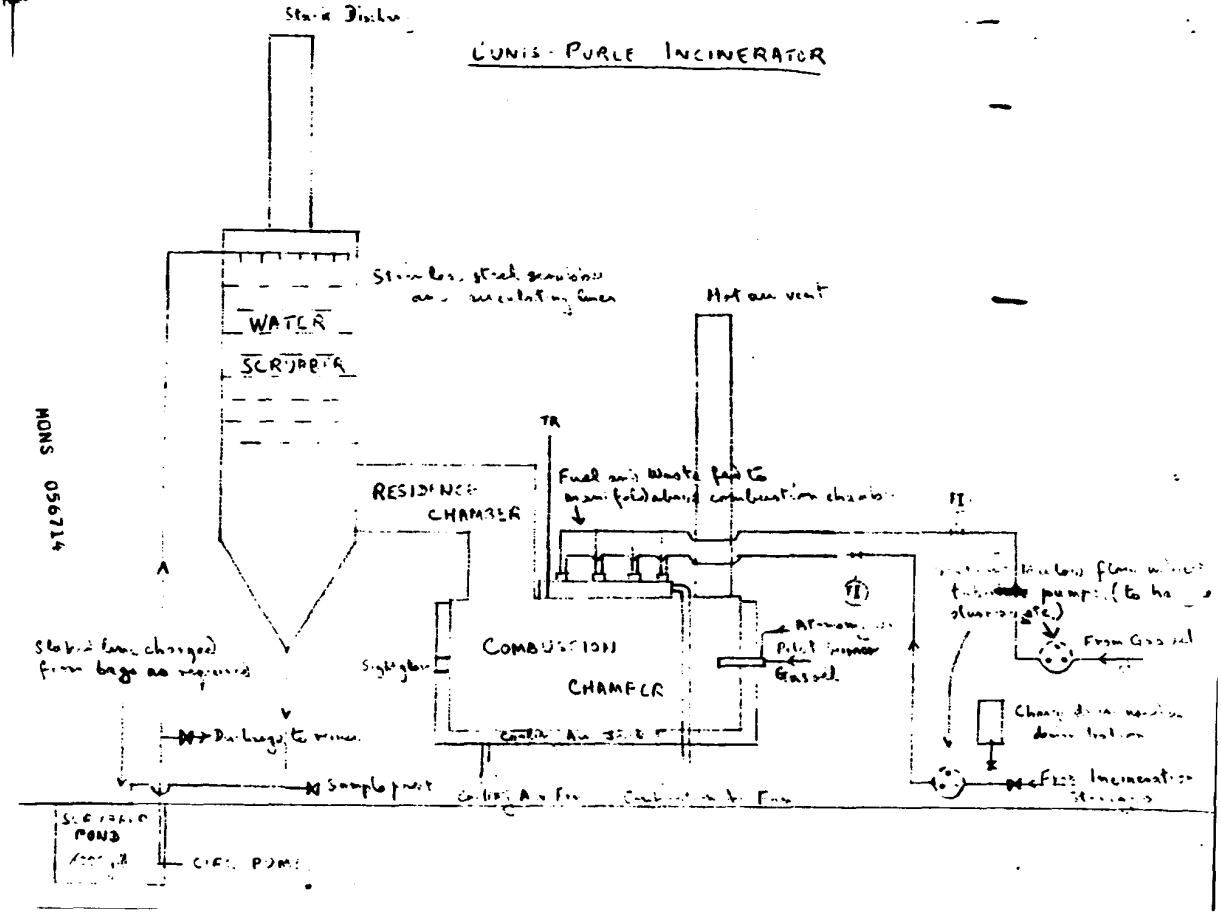

Stack Discharge
LUNIS - PURLE INCINERATOR
WATER
SCRUBBER
Hot air vent
TR
RESIDENCE
CHAMBER
Fuel and Waste feed to manifold above combustion chamber
COMBUSTION
CHAMBER
Sight glass
Gas oil
From Gas oil
Sample port
POND

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