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PROGRESS REPORT
TECHNICAL SERVICES DEPARTMENT
AQ. 31694

JOB NO:- 27/7130/2333

REPORT:- No. 1

DATE:- 13th January, 1970.

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Title: ARCOLORS EFFLUENT - VISIT TO N.C.R. (BOREHAM WOOD)

Personnel: J.D. Humphreys (J.W. Pennington)

- Objectives:
1. Investigate cause of spillage which occurred during off-loading of Arcolor delivery and make recommendations to prevent recurrence.
 2. Survey effluent from customers site and assess actual or potential pollution. Prepare recommendations for possible action by Marketing Department.
 3. Prepare off-loading procedures for the receipt of bulk road tanker deliveries.

Summary:

The visit was made on 8th January, 1970, in the company of Mr. A. Dibbo (Marketing) and discussions were held with the N.C.R. Plant Manager (Mr. Powell) and the N.C.R. Chief Chemist.

The principal cause of the spillage was lack of a proper off-loading procedure and N.C.R. supervision. Repositioning of the tank level indicators near to the off-loading point or provision of level alarms is also recommended.

Any spillages at the storages or the tanker off-loading point go into the surface water drainage, which is tied into the street drainage and flows via a local break into the River Colne, a tributary which enters the Thames at Steane.

There were two neutralisation units to treat plant effluent one of which also had a coagulation section. The effluent from the unit without coagulation appeared to be quite highly polluted with emulsion. This effluent was discharged to the municipal sewage works and thence also into the River Colne.

Samples of the various effluent streams were taken; the results are presented in Table 1.

A line of enquiry to be investigated further was the report that, at the paper coating plant where the N.C.R. emulsion is used, up to 20% of the paper or 10,000 tons/annum ends up as off-cuts which are sent for repulping to a South Wales Location during which it is endeavoured to wash out the emulsion.

Subsequent to the meeting the Chief Engineer of the Monmouthshire Board Mill at Newport (a personal friend of F.Macdonald) was contacted by F.Macdonald to establish whether they remarked any N.C.R. off-cuts. They had attempted to do this in the past but the chemical reaction and blue dye had been unacceptable to their process. They had never taken rework apart from these trials.

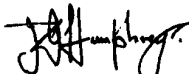
It was suggested that Bridgend Paper Mill who are very active in reclamation might be involved in this activity. This lead will be followed up.

Recommendations:

1. Provide full off-loading instructions for the tanker driver and N.C.R.
2. An interceptor pit should be fitted in the N.C.R. surface water system. Level indication in the storages should be improved.
3. All N.C.R. effluent should be given a coagulation treatment to remove as much Aroclor containing emulsion as possible.

Future Work:

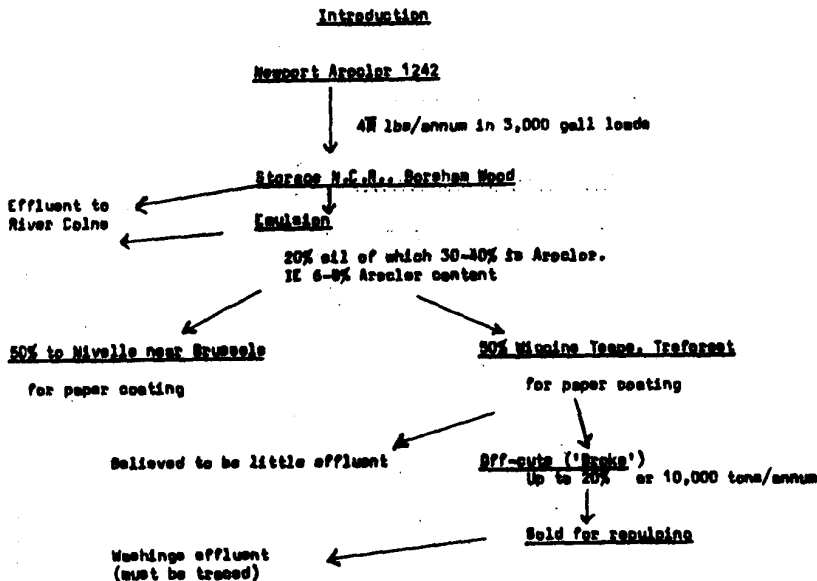
1. Investigate further the possible pollution from repulping of off-cuts.



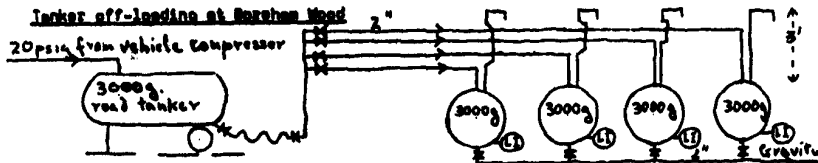
J.D. Humphreys
Technical Services Department

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Details:



The above diagram illustrates what happens to the Arcolor at N.C.R. and in the paper coating process.

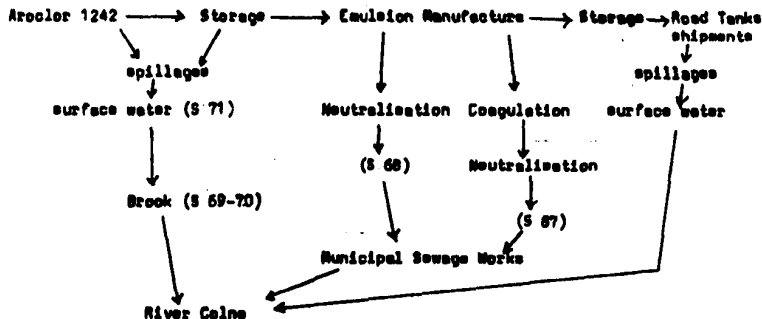


The tank levels were allowed to balance out by keeping the bottom outlet valves open. It is not known whether only one or all the valves to the individual storages were opened when discharging a road tank. On several occasions spillages had occurred as a result of discharging into one tank at a faster rate than the tank levels could balance out. An N.C.R. clerk was apparently supposed to look after the off-loading.

Level indicators were provided on the tanks, but these were inconveniently located in a shed obstructed by various kegs of raw materials. There appeared to be no official off-loading instructions.

A drum was provided to catch drips at the flexible hose, but installation of an interceptor pit to prevent spills on to ground entering the municipal surface water drainage system is recommended. This should also handle drainage from the adjacent emulsion tanker loading area.

Borham Wood Effluents



The above diagram indicates where samples (S_) were taken at Borham Wood. These are listed below:-

<u>Sample No.</u>	<u>Source</u>	<u>Analysis (µ PCs)</u>
67	Centrifuge effluent neutralisation tank. This system also included an $Al_2(SO_4)_3$ coagulation unit. It had not been used for some days, the effluent was clear, but slightly blue in colour.	53,500 ppb
68	Main neutralisation tank. Effluent was milky, flow appeared to be about 10 g.p.m., but M.C.R. could not give an average figure.	5,360 ppb
69	Water from a local brook into which the surface water discharges. May also contain effluent from other local factories.	1,620 ppb
70	As above but containing a proportion of mud.	152,500 ppb
71	Surface water drain (No flow when taken)	31,200 ppb

The low PCB content of the main effluent stream was surprising in view of its contaminated milky appearance. This analysis is to be confirmed. The blue appearance of the centrifuge effluent stream was presumably due to the dye incorporated in the W.C.R. emulsion, and would therefore be consistent with the high contamination level found.

The contamination levels in the surface water drain and the brook confirmed that considerable amounts of PCB had been discharged in this direction from spillages in the tanker off-load/storage area. At the time of sampling pollution of the water was at a comparatively low level, but the mud in the brook was heavily contaminated from earlier spillages.

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