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PRELIMINARY REPORT OF INERTEEN ENVIRONMENTAL SURVEY AT SOUTH BOSTON TRANSFORMER PLANT

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PRELIMINARY REPORT OF INERTEEN ENVIRONMENTAL SURVEY
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I. Background

In March, 1971, Dr. R. Hughes of the Westinghouse Environmental Systems Department and I visited the South Boston facility and outlined a sampling program to determine the leakage (if any) of polychlorinated biphenyls (PCB's tradename Inerteen) to the environment around the plant. As we discussed at that meeting, because of the many state and federal pesticide monitoring programs underway or planned, and because of the growing concern over environmental contamination by PCB, we felt it highly likely that any leakage of PCB from Westinghouse plants would eventually be discovered. We felt that the plants would be in a more favorable legal position if necessary corrective measures had been taken or were underway at the time that any leakages were discovered.

At the time of our visit we were attempting to gain the necessary financial support for the program on a plant-by-plant basis. At that time, the South Boston management felt that the 1-dash research money for the year was firmly committed and that the program was too expensive to be supported as a direct expense. The program began in June when Dr. Shoupp arranged the support from Research monies, but, prior to this time, South Boston personnel sent a few samples to Monsanto Chemical Company for analysis, a service which Monsanto provides free (on a limited basis) to their principle customers.

At the end of July, 1971, Westinghouse Ocean Research Laboratory personnel



took samples around the plant and the surrounding area. The analytical phase of the program fell far behind schedule due to an expanded work load from other commitments, but in late September sufficient data had accumulated to indicate substantial leakage to the environment from the plant. Upon receipt of the data, South Boston personnel, in December, shut off flow to an oil skimmer tank which appeared to be the principle leak via an overflow ditch into Lawson's Creek (which eventually leads to the John Kerr Reservoir via the Dan River).

During the summer of 1971, as part of a state or federal routine pesticide monitoring program, fish and sediment samples from the John Kerr Reservoir were analyzed and found to have high levels of PCB's. This information was communicated to the Virginia State Water Control Board which secured funds from the state legislature for a program to determine the sources of the PCB's in the Kerr Reservoir. As part of this study, a state official visited the South Boston plant and took sediment core samples from the oil skimmer overflow ditch and Lawson's Creek. These samples have not yet been analyzed.

II. Results and Discussion

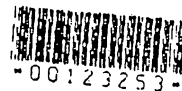
The data from the samples that have been analyzed are presented in figures 1 and 2 (procedures and calculations are contained in Westinghouse Permanent Record Book #202932).

All of the samples in figure 1 gave chromatograms which were identical with those of Inerteen (Aroclor 1242) taken from the storage tank at the South Boston plant. At the time of sampling, it was thought that the only probable leak would be from the oil skimmer tank. It is clear, however, that the two



ditches also receive leaked Inerteen. The leak to the ditch from which sample 20 was taken appears to have contaminated the clams taken from a non-flowing branch of Lawson's Creek. This leak may also have contaminated sample 5 which is upstream from the oil skimmer overflow input, but this point is not clear because at times of high flow, the waters of the Dan River back up into Lawson's Creek and flood this area. The low values of the sediment samples in Lawson's Creek may not be a good indication of the amount of material leaving the site because of the large amount of dilution that may take place and because large amounts of sediment may be moved away by the creek. By the same token, the extremely high value from the sediment of the oil skimmer overflow ditch may not be represented because apparently very little sediment transport takes place and leaking Inerteen probably bathes the same sediment particles over long periods of time. The same rationale applies to the two ditch samples. ~~XXXXXXXXXX~~

Although considerable effort was expended at the time of sampling, clams were obtained at only the one site indicated. Even though it would be very difficult to prove, several observations indicate that the Inerteen leakage may have had a detrimental effect on the clams. Although many empty shells were found, no live clams were found anywhere except at the one site above the overflow ditch input. The only shells found were those of old clams which had reached maturity before the South Boston plant was built. Had a natural catastrophe caused the death of an otherwise healthy population, shells at all stages of growth should have been observed. The first inputs of Inerteen to the system may have killed the younger, more susceptible members of the population and prevented production of young in later seasons. Later, when the accumulated dose was high enough, the adult population may



also have died.

The data presented in figure 2 clearly indicate that there are major inputs of PCB's to the Dan River upstream of any possible input from the Westinghouse plant. The apparent lesser amount in the sample downstream from the Westinghouse input is probably not significant, but the fact that this sample is not much higher indicates that the Westinghouse input is probably small compared to the amount being carried down by the Dan River--particularly because the probable inputs are as far away as Danville. The much higher level in the catfish (compared to the shiners and minnows) is not significant because the catfish was much older and feeds on the sediments.

III. Recommendations

The data presented here clearly indicate that there is leakage of PCB's to the environment from the South Boston plant, and that this leakage can easily be traced back to the plant. Not enough work has been done, however, to rest assured that all leaks have been located. Additional samples should be analyzed from the other drainage ditches. Soil samples taken from the high areas on the grounds should be analyzed to examine the possibility of areal fallout of Inerteen. Additional samples need to be taken far upstream in Lawson's Creek to ascertain whether non-Westinghouse material is being transported downstream and to get some feeling for the magnitude of the material being carried down to the Dan River.

The sources of the Inerteen in the ditches should be identified and corrective measures considered (I have been told that one ditch probably

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gets Inerteen from a vacuum system exhaust which could be fitted with a scrubber).

Because the State of Virginia is now analyzing samples which will almost certainly make them aware of the nature of our problem, I suggest that we cooperate with them, even to the extent of communicating some of our data to them if theirs corroborates ours (the data from the Monsanto analyses are essentially the same as some of that presented in this report, so I expect that the state data will be similar). I have talked with the people who are conducting the state program, and I feel that it would be greatly to our advantage to participate in their program to the extent of cross-checking some of their analyses and consulting on the interpretation of some of the chromatograms.



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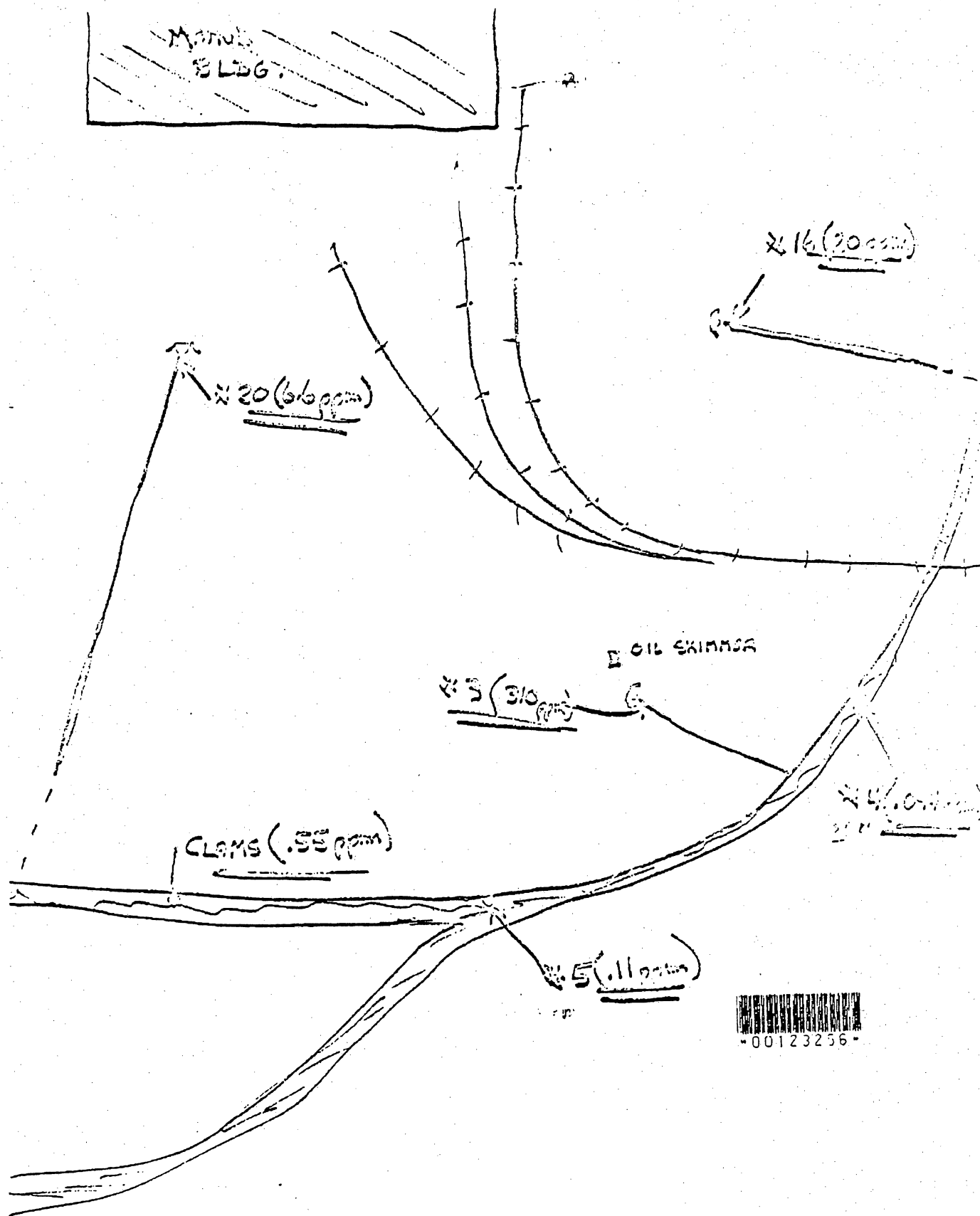


FIGURE 1. SAMPLES AROUND PLANT

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