FOLLOWING PAGES DICTATED BY MRS. RITA GRAY BEATTY ON NOV. 16, 1971

The instrument most frequently used to measure DDT is the gas chromatograph. All the gas chromatograph does is to separate material in a given sample. This in itself is useless information unless you can identify the material you have separated. If you put a sample of bourbon in the gas chromatograph it would separate that bourbon into 25 or 30 different components, one of which would be ethyl alcohol, if the gas chromatograph were properly adjusted. But first, the separator must know at what point the ethyl alcohol peaks on the chromatograph. If he does not know that he cannot identify the amount of ethyl alcohol in the sample of bourbon.

There are many kinds of detectors that may be used with the gas chromatograph. For example, there are detectors that will respond only to chlorine atoms. This is the reason that DDT and PCBs have been analytically confused. These both contain chlorine. Prior to the development of more refined analytical techniques in gas chromatography, PCB and DDT, because they peaked at virtually the same level, were frequently confused with one another. With the improved analytical methodology and equipment, such confusion has been virtually eliminated. Because both of these peak at the same level, known samples of each must be tested first to determine their exact readings. By so doing, it is now possible to tell one from

the other. The only time a problem should arise is when a given sample contains both. Unfortunately, all too frequently, a given sample does contain both. This is where the expertise comes in.

We have detectors that will respond only to nitrogen or only to carbon. Some detectors respond only to any electro-negative group (oxygen, chlorine, sulfur, phosphorus). This is the detector most commonly used. This electron capture detector, which is indiscriminate, doesn't tell you what it is counting, it only tells you it is counting something. It is up to the separator to make that deduction. There are detectors that will respond only to phosphorus which we use for the organophosphates such as parathion.

When a statement reads that something was proved by the gas chromatograph it is often a nonspecific statement in that no mention is made of the type of detector used. A gas chromatograph by itself, no matter what detector you have, does not identify anything. It separates but it does not identify.

A gas chromatograph provides useful information but it proves nothing except quantity. It measures signals but it is up to the separator to find out what the signals are. The chromatograph is a superb quantitative tool.

By using the gas chromatograph alone, it could never be said with certainty that something is DDT. We could say that it probably is, or very likely is, but without further analytical studies we could not prove that it contained chlorine by using the right detector or phosphorus or sulfur.

The fact that DDT comes out at a given time interval on a gas chromatograph doesn't mean that only DDT will come out there. There are several thousand chemicals out of more than a million that would give the same reading. But at least it eliminates the majority of these chemicals.

Regardless of analytical procedures and refined technology to distinguish between the PCBs and DDT, DDT continues to be used as the headliners. The following headline appeared in the San Jose Mercury, August, 1971, " 'DDT' Egg Seizure on East Coast." The lead paragraph of this story reads "The Food and Drug Administration announced Friday it has seized nearly 7,000 dozen eggs and 45,000 pounds of catfish food because of contamination with a DDT-like substance." The article continues, "The FDA said the seized eggs and catfish feed were tainted with a substance called PCBs...for polychlorinated biphenyls...which have been implicated with causing birth defects and liver damage in test animals." DDT is never

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mentioned again within this AP article; yet it was the first word in the headline. It is true that these two compounds have been mistaken by the gas chromatograph but there is absolutely no similarity between the two except for the fact that they both contain carbon chlorine bonds.

When Monsanto Company, the sole supplier of PCBs in the U.S., England and Canada, first became aware that this product was causing environmental problems, they immediately and voluntarily stopped the sale of all PCBs except for three specific uses:

1. electrical transformers
2. electrical capacitors
3. closed heat-transfer systems (See Chart, Page o0o).

"The reason that Monsanto continues to sell for these three purposes," according to Mr. William B. Papageorge, manager of Monsanto's environmental protection division, "is that the benefits of use here far outweigh the problems we might encounter if the material escaped into the atmosphere." Mr. Papageorge was referring to the danger of explosion caused by steam, the only other known method of achieving temperatures up to 1,600 degrees F. Monsanto voluntarily provides sealable containers into which the PCBs from these closed-circuit systems are placed by the user after cleaning their transformers. These sealed containers are returned to Monsanto

at Monsanto's expense for refining. Monsanto should be commended for their attempt to protect our environment; however, there is a fly in the ointment. PCBs are not subject to any patent. Outside the U.S., Canada and Britian, the market is wide open. PCBs are manufactured in Japan, Germany, France, Spain, Poland and Czechoslovakia. Although Monsanto has never sold PCBs to an asphalt company, in many areas of our country PCBs are found in asphalt because these companies buy up refuse such as crankcase oil and transformer fluid to use in their product. They can no longer buy up the transformer fluid but the fact remains that there is a tremendous amount of asphalt on our streets, driveways and highways that contains PCBs and every time it rains the water washes these PCBs into our sewers and waterways. Monsanto does not allow PCBs to be made near potable water or food.

There were many ways that the PCBs could get into the global environment. One of these was by incineration. Products containing PCBs, such as carbonless reproducing paper in business forms, plasticizers and spent ballasts from fluorescent light fixtures all found their way to the city dump for burning, hence into a gas form. If burning was prohibited and landfill used instead, there was still runoff after rain. The PCBs can also escape through plant ventilation and exhaust systems; however, elaborate precautions

are taken in this country to curtail this. PCBs don't burn but they are vaporized. They are carried into the atmosphere where they can collect on minute particules and are then returned to the surface of the earth into rivers, lakes and the oceans.

In 1910, 34 soil samples were collected and sealed in glass jars. In 1970, the 34 sealed glass jars were opened and analyzed by means of a gas chromatograph. The analysis indicated the presence of modern chlorinated hydrocarbons (DDT's category). In 32 of the 34 samples, even though not one of these chlorinated hydrocarbons had been developed until 35 years after the samples had been sealed. The reading could not have been showing PCBs either because the PCBs were not used until 1929. This is an example of the gas chromatograph indicating the presence of "something," but no one knows what it was detecting. Nevertheless, when the samples were tested, they announced that DDT was found. When called on this error, they then indicted the PCBs.

Using this kind of logic and accuracy, we could make a pretty good story about Teddy Roosevelt and his roughriders charging up San Juan Hill in their jeeps only to be met at the top by the Spaniards armed with napalm.

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