Protection Agency, accompanied by Mr. Glenn Schweitzer, who directs the Office of Toxic Substances.

STATEMENT OF JOHN L. BUCKLEY, CONSULTANT, OFFICE OF RESEARCH AND DEVELOPMENT, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY GLENN SCHWEITZER, DIRECTOR, OFFICE OF TOXIC SUBSTANCES

Dr. Buckley. Mr. Chairman, with your permission I will read the statement that has been presented to you.

Senator Tunney. Yes, Doctor, fine.

Dr. Buckley. Mr. Chairman and members of the subcommittee, I am John Buckley, consultant to and former Acting Deputy Assistant Administrator for Program Integration of the Environmental Protection Agency's Office of Research and Development. I am accompanied by Mr. Glenn Schweitzer, Director of EPA's Office of Toxic Substances.

I appreciate the opportunity to discuss for the subcommittee the concern of the Environmental Protection Agency over the recent developments which suggest that environmental contamination by polychlorinated biphenyls (PCBs) is more widespread, and that some concentrations are higher than previously believed. For a number of years I have been directly involved in a broad range of governmental efforts to reduce environmental levels of PCBs.

In 1972 I thought that things were well in hand. The sole United States producer had already voluntarily restricted sales except for uses in closed electrical systems. The various

Federal Reporters, Inc.

agencies of the Federal Government each took actions within their regulatory authority. EPA's part of those efforts was support of the policy permitting use only in closed electrical systems and promulgation of a policy designed to restrict PCBs to very low levels in the aquatic environment. However, while we may have slowed the rate of growth of the problem, I am convinced now that in the absence of legislation authorizing additional governmental action the PCB problem will not be adequately resolved.

I am submitting for the record a copy of our response to the subcommittee's request of October 1, 1975 for information on PCBs. This information is based on industry responses received to date to recent EPA requests for data pursuant to section 114 of the Clean Air Act and section 308 of the Federal Water Pollution Control Act.

(The document referred to follows:)

Dr. Buckley. Also, I am submitting for the record a recent detailed statement by Mr. Schweitzer setting forth the history of the PCB problem, the past efforts of government and industry to address PCBs, and current EPA activities directed at reducing the problem.

XXX (The statement referred to follows:)

Dr. Buckley. In this statement I plan to highlight very briefly some of our current concerns, and of course we will be pleased to elaborate in detail on those aspects of particular interest to the subcommittee.

We have known for some time that PCBs are a group of chemicals which at certain levels can cause serious toxic effects on man and can adversely affect our ecological resources. During the past several years we have increased our understanding of the extent and nature of the human health threat of PCBs and the extent of the potential adverse effect on fish reproduction of very low levels of PCBs.

However, we still have much to learn about the full range of toxic effects of PCBs and their movement, persistence and fate in the environment. At the same time industry is working toward finding alternatives to PCBs, which have been particularly important materials in electrical systems.

Recent reports from the Great Lakes area, the Hudson River valley, and other parts of the country underscore the urgency of the problem. In these areas relatively high levels of PCBs in fish -- levels which greatly exceed FDA guidelines -- are not only threatening our ecological resources, but are impacting directly on the jobs of local fishermen and on available food supplies. At the same time continuing PCB discharges are adding further to the total environmental burden of these chemicals which degrades very slowly indeed.

PCBs reach man and the environment through many routes: as water effluents, air emissions, and solid waste from manufacturing activities; through leakages from products containing PCBs during their operation, transport, and disposal; and from contamination of raw materials and products exposed to PCBs. Thus, it has been recognized for a number of years that the most effective way to limit PCB contamination is through the regulation of the manufacture, distribution, use, and disposal of the chemical rather than attempting simply to turn off those individual routes of environmental discharges, one by one, which can be addressed under existing laws.

This approach was strongly recommended in the 1972 Interdepartmental Task Force on PCBs and is embodied in the 1973 decision of the Organization for Economic Cooperation and Development. We understand that Japan has banned the manufacture and import of PCBs. Canada expects to take action against PCBs under pending toxic substances control legislation.

Of course, in the absence of adequate authority to regulate manufacture, distribution, use, or disposal, EPA will continue to address PCBs under existing authorities, and particularly the Federal Water Pollution Control Act, recognizing the inherent limitations in attempting to control the problem through a limited and piecemeal approach.

In view of the severity of the PCB problem and our anticipation that appropriate toxic substances legislation will be

al Reporters, Inc.

enacted along the lines of S. 776, including the amendments proposed by the administration in its June 23, 1975 letter to the chairman of the Senate Committee on Commerce, EPA is in the process of preparing the necessary detailed documentation which would be required for regulatory action under the legislation.

Our aim is to be in a position to propose specific measures when the legislation in enacted. These measures would take into account not only the available information on toxicity and exposure levels, but also the impact of regulatory steps on business, employment, and the economy. A key concern in this regard is the availability of acceptable alternatives to PCBs, which have not been demonstrated for all uses at this time.

An important step in the development of an approach to the PCB problem is a National Conference on PCBs which EPA is sponsoring in cooperation with the Council on Environmental Quality, and the Departments of Agriculture; Health, Education, and Welfare; and Interior. This conference will be held in Chicago from November 19 to 21 of this year, and will cover the entire spectrum of concerns related to PCBs.

We intend to bring together the leading experts on PCBs to ensure that the latest and most authoritative information is available for careful consideration in developing a regulatory program. Representatives of Federal and State agencies, industry, environmental groups, universities, and other interested

ral Reporters, Inc.

organizations will not only be invited to attend, but will be provided a platform to express their views on practical steps that are needed in the near-term, as well as the need for further study and research.

In conclusion, PCBs offer an excellent example of the need for the type of regulatory authority similar to that contained in the proposed Toxic Substances Control Act with the amendments to it proposed by the administration in EPA's letter of June 23, 1975. Despite governmental efforts to control the PCB problem, despite voluntary action on the part of the sole U.S. manufacturer of PCBs to sell only to customers who have stated their intention to limit the uses of PCBs, and despite a formal international agreement embodying a multinational commitment to control PCBs, environmental contamination persists. All these factors demonstrate the need for this legislation now.

Mr. Chairman, that concludes my prepared statement. I will be glad to answer any questions the subcommittee may have.

A fols

MONS 089461

. GeoK

Senator Tunney. Thank you. I was interested, Dr. Buckley, on Page 4 of your statement where you indicated -- I guess this is the first full sentence -- "Thus it has been recognized for a number of years that the most effective way to limit PCB contamination is through the regulation of the manufacture, distribution, use, and disposal of the chemical rather than attempting simply to turn off those individual routes of environmental discharges, one by one, which can be addressed under existing laws."

As you know, one of the arguments that is presented to our committee is that there is existing authority now that is adequate to deal with the problems of toxic substances. They refer to the work of the Pollution Act and other various laws that have been passed to protect the public.

It would seem to me from your statement that that is a very specific reference to the argument that is presently being made, that existing law is adequate, and you are strongly disagreeing with that argument, I understand.

Dr. Buckley. I intended to state that precisely the way I did. I firmly believe that as an individual, I believe that is the situation. This is the best example that I personally am acquainted with in which the best efforts and goodwill of people inside of the government and industry, attempted to solve a problem.

I think the maximum efforts of the Federal Government in

2/2

terms of regulatory actions that were coordinated and agreed to among the various departments all took place. Monsanto did its best to limit sales. It worked hard with its customers to find alternatives that might be used. Nonetheless, there is import of PCBs which is not illegal. There are uses which appear to us to be in violation of what we would like to have happen though in no sense illegal, something over which we have no control, and the fact is that the levels of PCBs, at least in the Great Lakes, in the Hudson River, and in Southern California and in some other locations has not only not declined but in some cases has increased.

I use this as compelling evidence that existing authorities are inadequate to cope with this particular kind of problem.

Senator Tunney. Well, it would be helpful, I think, for those of us who are not toxicologists to have a better understanding of what we know about the toxic effects of PCBs and their persistence in the environment, and any other information that you might have that would be illustrative of the hazards associated with this chemical.

Dr. Buckley. Do you wish a statement statement on this or --

Senator Tunney. A short-form statement, yes, but one which outlines, if you would, for the committee and for other members of the committee who are not here but who are

going to be involved in the markup of the toxic substance bill in another few days or weeks, what the impact of PCBs are on human health.

You said the existing law is not adequate to control their dispersal throughout the environment.

Now, I would like to know what is the impact of PCBs upon human health and what is their persistence in the environment?

Dr. Buckley. I will submit for the record a short statement on health effects. I would also like to make a few remarks and I would point out that at this conference in November there are a series of sessions during the three days, one of which will address the question of health effects and current information on the effects of PCBs on man, rather an update from what we did in 1972, and there will be a similar session that deals with movement in the environment and there will be another of like type dealing with the effects on organisms in the environment.

(Information to be supplied.)

Dr. Buckley. It would be premature to speak to some of those but recent information in this time, as in 1972, we were aware of one incident in Japan in which there had been a clearcut case of disease caused by leakage of PCBs into rice soil, a very heavy contamination, but which did in fact result in considerable human suffering. Babies that were born had dark skins. There were an unusally large number of miscarriages among the pregnant women exposed to this. There were an assortment of other symptoms.

I do not pretend to be an authority on health effects and I would prefer that these questions, other than what I provide for the record, be handled by someone else.

As to the persistence, I suspect that certainly they are less persistent in the environment than the heavy metals but my own judgment is that they probably are more persistent than almost any of the synthetic organic chemicals. They probably metabolize very slowly, and apparently are broken down by physical processes in the environment very slowly.

It is possible at least that the increased levels that we find now in the environment result from not an increase of material added to the environment but simply the continued accumulation, leakage into the environment, if you will, of materials that have been used widely for the past forty or more, fifty years.

I suspect that -- it is clear to me that one would talk

2/5

about the duration and persistence in the environment in terms of probably tens of years rather than months or even years.

As to the effects on living organisms other than man, there is reasonably clear evidence of impairing of reproduction in some fish species which can be demonstrated in the laboratory and is believed to have been observed in the field.

It is clear that in the case of mink, captive mink, at any rate, that relatively low levels in the diet, a few parts per million in the diet, is enough to completely eliminate or greatly reduce reproduction in mink.

This was discovered first because when the -- when some fish were considered unfit for human consumption, they fed it to mink, as a cheap source of food, but aftereffects were determined, it really wasn't really that inexpensive as a source of food.

There are other kinds of effects on other organisms and I guess I would suggest that to generalize, which is always a little bit detrimental, is -- I think they have a greater effect -- reproductive effect on animals than on birds and organisms lower in the food chain.

Senator Tunney. Is there evidence that they are carcinogenic?

Dr. Buckley. There is evidence submitted for publication that they produce tumors in rats.

al Reporters, Inc.

Senator Tunney. At what part per million feeding level?

Dr. Buckley. I am sorry. I didn't hear.

Senator Tunney. At what level has it been determined that they are carcinogenic?

Dr. Buckley. I am sorry, I don't have that information here.

Senator Tunney. Do you have it?

Dr. Buckley. I will provide it for you.

Mr. Schweitzer. No, I don't have it.

Senator Tunney. Is there evidence that PCBs are found in the environment in the United States in levels that are in excess of what toxicologists, the authorities, feel is safe?

Dr. Buckley. I think that if we take the Food and Drug Administration guideline for allowable amounts in fish at five parts per million, it is clear that there are numbers of fish which exceed that concentration by a very considerable amount, a factor of several times. Not all fish in all places but there have been levels in fish found in the range of forty, fifty, maybe even 150 PPMs. So it is not just a modest amount over the amounts which are thought to be acceptable.

Senator Tunney. Well, now, I received a letter the other day from Stanley W. Claigrow, Assistant Administrator for Enforcement, Environmental Protection Agency, and the letter is dated October 20th.

Reporters, Inc.

(Committee Insert)

Senator Tunney. Have you seen this letter?

Dr. Buckley. Yes, I have. In fact, I referred to a copy of it in my statement that I would submit it for the record.

Senator Tunney. As I read this letter, it says we have information that the EPA has gathered information that reveals that far from having PCBs under control by voluntary agreement of the sole American manufacturer, Monsanto, the problem of PCBs is far from solved, and he goes on to say there are a number of importers of PCBs -- I think the number is twelve -- who are not a party to the Monsanto agreement. Their importation has amounted to over a million pounds of PCBs in the course of the last three and a half years. And also that the importers are using PCB for other than the closed system usage which apparently results in their release and disposition into the environment.

As I read the letter, it is further indicated that there are certain indications that several of Monsanto's customers are using PCBs as heat transfer fluids and as vacuum pump seal oil, neither of which are closed system uses.

Apparently PCBs have been found in five municipal water systems, and apparently it represents a far more serious toxic threat than we had initially anticipated.

It is indicated that, as you have indicated, that in Japan, one of the most highly industrialized countries in the

2/8

world, has managed to do without PCBs for some time.

Now, the question I suppose is again talking as a complete layman who doesn't really understand the molecular makeup of PCBs but who does understand cancer very well, having gone through a number of cancer wards in my life and having a number of relatives and friends die from cancer, I just wonder if we could do without PCBs?

Dr. Buckley. Well, this is one of the questions which we will address at the conference in November. As I pointed out in the statement, I think there are uses for PCBs where I personally have not yet seen evidence that there are entirely satisfactory substitutes.

It may well be that there are and in that case there are things of which I am unaware. It is not clear to me that one necessarily would have to ban all uses of PCBs. They are an extraordinarily valuable compound for certain purposes and it is not evident either that those uses which we agreed to in 1972 result in substantial amounts reaching the environment. It may well be that its uses other than those over which we apparently have no means of control today, which are resulting in continued pollution of the environment by PCBs.

follows

Senator Tunney. Well, you say that EPA had no evidence that the Monsanto Company has violated its agreement to restrict sales, and you go on to say that they have been used in ways that will be beyond the agreement, not by Monsanto but by the customers of Monsanto and by the importers. And you say that while only five spills have previously been reported to EPA headquarters from '72, information indicating approximately 15 others are indicated in recent situations. You say in general disposal of PCBs is primarily in landfills and wastes and less by incineration. This indicates that these were disposed of through processers who reclaim PCBs for further use, and that you indicate, as I say, that you have taken water samples from interstate carrier systems and that you have identified certain levels of PCBs in Illinois, Indiana, Escondido, California, Bridgeport, Connecticut, Bellevue, Massachusetts.

Now, was the level in any of those water systems of the PCBs in excess of what the Food and Drug Administration advises it should be?

Dr. Buckley. Senator Tunney ---

Senator Tunney. --- above the safe level?

Dr. Buckley. The Food and Drug Administration has authority over water in so far as there is a food additive but predominantly the responsibility for drinking water is an EPA responsibility.

As to the safety, there is no published standard or

criteria for PCBs in drinking water. We have asked the National Academy of Sciences which is conducting the study for us in implementation of the new Water Supply Act, to give special attention to this question. I would point out, however, that the levels that are found in these five samples of water out of a great many samples that have been looked at, are at very low levels. They are most of them in fractions of a part per million and at the highest, a few parts per million.

This is a factor of 1,000 less than the amounts which are regularly found in some fishfoods, fish which are used as food. On the face of it if I were to worry about health in relation to PCBs I would be much more inclined to worry about food as a source of food rather than drinking water. Nevertheless, EPA will pay attention to this in its publication of standards.

Senator Tunney. Because of that tendency of toxic substances to concentrate in ever-increasing amounts the higher experience in the foodchain, is that basically the thought? Plankton has a certain level -- water has a certain level and plankton higher, and fish a higher level.

Dr. Buckley. In many cases there is a direct uptake by the fish from the water and one does not need to involve accumulation through the foodchain. They are taken in both through the surface, the gills and with food and the result is accumulation levels, differences in levels which may be as much as 100,000 between the amount present in the water and the amount

present in the fish in that water.

The other point I would like to comment on if I may, you noted that even though Monsanto had these restrictions, nonetheless, other sources seem to be using PCBs in other ways.

I am not totally knowledgeable about the Monsanto operation and what controls they have over their customers and how closely they can police those people to whom they sell PCBs and I suppose it is conceivable that EPA could as through these letters who buys it and then in turn could visit each one of these companies and check out in detail how they are used but there is nothing legally which is inappropriate in the use those companies make of it. It may be inappropriate in what we in government and Monsanto agreed were proper things to do. But it is not improper for them to use that chemical that way.

Senator Tunney. That is because of the lack of regulatory authority?

Dr. Buckley. Yes, sir. There is no authority to regulate the use.

Senator Tunney. And which lack of regulatory authority could be corrected by the Toxic Substances Control Act passage?

Dr. Buckley. Yes.

Senator Tunney. I note in your letter you say that EPA -- not your letter but EPA's letter to me -- says that EPA does not possess information concerning the importation of PCBs as opposed to the chemical state. Do you have an idea of the magnitude of

Reporters, Inc.

this problem, the importation of PCBs?

Dr. Buckley. To my knowledge we have no indication of the scale of it. Certainly what we had in mind is in the importation of chemical equipment or other things of this sort, that they certainly may well be included but those sorts of importations we have no information on.

Senator Tunney. According to Mr. Schweitzer's statement accompanying your testimony, the fish in southern California have been found to have concentrations of PCBs of 6.6 parts-per-million up to 350 p.p.m. in the Hudson River.

What has been the effect of finding these levels on commercial and sport fishing in these waters? Has it had any impact on it? Has there been any control over ingestion of those fish by the sports fishermen? Has there been any warning to sports fishermen in those areas?

Dr. Buckley. Yes, certainly in the State of California -- excuse me, I don't know about the State of California. In the other two states or more than that, in those states surrounding the Great Lakes, particularly around Lake Michigan, there have been for several years warnings to sports fishermen to eat not more than one meal a week of fish taken from these waters. This has been a standing admonition from the health departments. It is not all fish in those waters but the large fish, particularly the trout and salmon.

There is a considerable ferment in the State of New York

about fish in the Hudson River. In addition to recreational aspects there have been seizures of fish moving in interstate commerce which have been taken in Michigan and shipped to Oregon or Washington.

Senator Tunney. Well, if in fact fish in the Hudson River have been found with 350 p.p.m. of PCBs and if the Food and Drug Administration says that five parts per million is a safe level, we are talking about a very large order of magnitude in excess of FDA's safe level. And what is being done to notify the sports fisherman in and around the Hudson as it relates to PCBs and what could happen to them if they ate those fish containing these high levels.

Dr. Buckley. May I ask Mr. Glenn Schweitzer to respond.

Senator Tunney. Yes.

Mr. Schweitzer. The State of New York is taking steps to bring the situation under better control. I do not have the precise dates with me but there have been hearings and there are hearings scheduled and organized by EPA and by the State of New York directed specifically to the problems in the Hudson River and also concerned about other problems in other rivers of New York. The New York authorities are indeed very concerned with the problem.

Similarly, the adjacent states are concerned in the New England area. We have had inquiries from your congressional colleagues reflecting this concern.

Senator Tunney. Not to be an alarmist, but information is made avaible by some cancer experts that a single exposure to a carcinogen may cause cancer. That may or may not be true, but that is what we here from time to time.

But if in fact that is true, I am just wondering, just one meal of fish containing 350 parts per million PCB could cause cancer.

Do you have any comment on that, Dr. Buckley?

Dr. Buckley. Well, Senator Tunney, as an ecologist rather than a health scientist I would be wise to not respond, Mr. Senator.

Senator Tunney. I know that there is a difference between the two disciplines, but I am not quite sure I understand what the difference is as it relates to that question. I mean, you must ---

Dr. Buckley. I will respond as an individual and how I would treat that in my own personal feeling. I would certainly prefer not to eat fish which contains 350 parts per million of PCBs. I think the evidence -- there certainly is evidence that in some cases single exposures of carcinogens in experimental animals have resulted in tumors. That is reasonably clear.

I think there is also evidence of other carcinogens of which continued intake at moderate levels has not resulted in tumors. I think until we in the scientific community as a whole understand the mechanisims better than we do now, there

will continue to rage a debate as to whether a single exposure or whether a continuous low exposure or whether there is or is not a threshold, all this will continue.

Senator Tunney. Is it possible, Dr. Buckley, for you to, the EPA, determine the major contributions of PCB, environmental contaminants, where they come from?

Dr. Buckley. I am sorry, I did not understand the question.

Senator Tunney. Are you able or is the Environmental Protection Agency able to discern where the major contributions of PCBs come from to the environment?

Dr. Buckley. I guess the only thing I could say is that we are working at it. I think probably they reach the aquatic environment mostly through point-source discharges, through sewage treatment plants or industrial manufacturing facilities.

There is also some evidence that they reach through diffuse sources. There have been samples of some taken for example or which have contained very low measurable quantities of PCBs which would flow into the environment. By and large I expect we can prove the major sources will be domestic waste sources and manufacturing facilities. Yes, it is possible to answer that but it takes an enormous amount of sampling and a great deal of time. Those things are underway, they have been for five or more years, and we know more about it now than we did then but there are some things we do not know.

Federal Reporters, Inc.

Senator Tunney. Have you made available to the committee

in the various statements that you have given to us, or collation of data, have you given us a summary of your investigation to date in any of those submissions?

Mr. Schweitzer. No, I do not belief we have given you a complete summary. Our goal is to have all the information available and put it in a usable form by the November conference. We have, for example, a great deal of monitoring information which has been collected by many Federal agencies, by states, by private institutions. Assembling that, putting it into a format in which it is usefull has been quite a job. Our target is to have that data laid out for the Congress in mid-November. So I would say that we think we will be in an excellent position in about a month to provide you and other interested parties with a rather complete picture of what is known about PCBs.

Of course, if the schedule is such that you need input sooner than that we would be happy to give you what we have.

Senator Tunney. It would be helpful to get what you have simply because the committee is going to start marking up the Toxic Substance bill sometime in the next few weeks. Now that we have gotten our energy conservation measures pretty well taken care of I think we will be able to address ourselves to the Toxic Substance Bill and so what information you have would be helpful.

Mr. Schweitzer. Certainly, we will be happy to work with your staff. I think rather than just send up piles of documents

we should be somewhat selective and we will talk with you again. We will be happy to give you what we have. I think in the monitoring area we can be helpful because we have devoted a great deal of effort in pulling together what is known from all sources.

Senator Tunney. Fine.

XXXX (Information to be supplied:)