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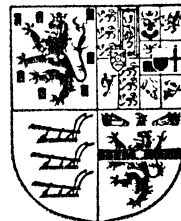
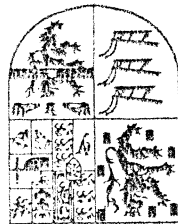
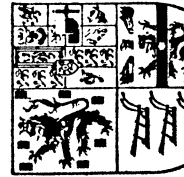
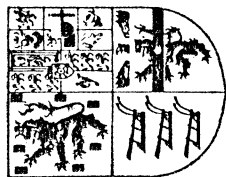
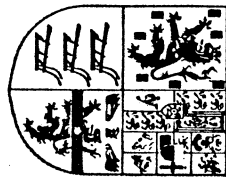
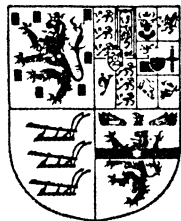
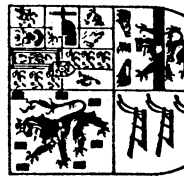
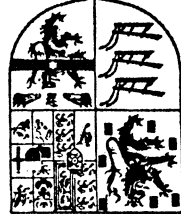
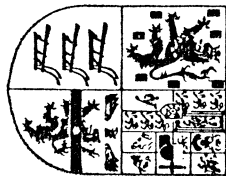
1979

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The State of New Jersey



P U B L I C H E A R I N G

before

ASSEMBLY AGRICULTURE AND ENVIRONMENT COMMITTEE

on

ASSEMBLY RESOLUTION NO. 3017
(An investigation concerning the
suitability of existing sites for
the storage of hazardous or chemical
wastes in this State)

Held:
May 9, 1979
Assembly Chamber
State House
Trenton, New Jersey

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MEMBERS OF COMMITTEE PRESENT:

Assemblyman H. Donald Stewart (Chairman)
Assemblyman James J. Barry, Jr.

ALSO:

Assemblyman Donald T. DiFrancesco
Assemblyman Raymond Lesniak

Norman Miller, Research Associate
Office of Legislative Services
Aide, Assembly Agriculture and Environment Committee

* * * *

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ASSEMBLY RESOLUTION No. 3017

STATE OF NEW JERSEY

INTRODUCED APRIL 23, 1979

By Assemblyman LESNIAK

(Without Reference)

AN ASSEMBLY RESOLUTION directing the Agriculture and Environment Committee to conduct an investigation concerning the suitability of existing sites for the storage of hazardous or chemical wastes in this State, including, but not necessarily limited to, the current storage of more than two million gallons of highly flammable and toxic chemical wastes along the waterfront adjacent to the City of Elizabeth, to review the statutes, rules and regulations of the Department of Environmental Protection and the local boards of health relating thereto, and to scrutinize the implementation and enforcement of such statutes, rules and regulations.

1 WHEREAS, The haphazard storage of toxic chemicals, chemical
2 wastes and other hazardous substances throughout New Jersey,
3 and especially in the State's various waterfront facilities, is a
4 highly irresponsible and potentially catastrophic undertaking
5 and imposes risks of damage to persons and property within
6 this State; and,

7 WHEREAS, The discharge of these hazardous substances within or
8 outside the jurisdiction of this State constitutes a threat to the
9 economy and environment of this State; and,

10 WHEREAS, It has been variously reported that the current storage of
11 an estimated 40,000 barrels of highly toxic chemical wastes and
12 other hazardous substances along the Elizabeth waterfront may
13 well pose such risks to persons and property and could threaten
14 the State's economy and seriously degrade the environment;
15 now, therefore,

1 BE IT RESOLVED *by the General Assembly of the State of New*
2 *Jersey:*

1 1. That the Agriculture and Environment Committee of the
2 General Assembly is hereby directed to conduct an investigation
3 concerning the suitability of existing sites for the storage of
4 hazardous or chemical wastes in New Jersey, including an inquiry
5 into the alleged unlawful and irresponsible storage of more than
6 two million gallons of highly flammable and toxic chemical wastes
7 along the waterfront adjoining the city of Elizabeth, Union county,
8 New Jersey, to review the statutes, rules and regulations of the
9 Department of Environmental Protection and the local boards of
10 health relating thereto, and to scrutinize the implementation and
11 enforcement of such statutes, rules and regulations.

1 2. The Speaker of the General Assembly shall appoint two ad-
2 ditional members of the General Assembly to assist the committee
3 in the performance of its duties pursuant to this resolution. No
4 more than one of the members so appointed by the Speaker shall
5 be of the same political party.

1 3. For the purpose of carrying out the terms of this resolution,
2 the committee shall have all the powers conferred pursuant to
3 chapter 13 of Title 52 of the Revised Statutes.

1 4. The committee shall be entitled to call to its assistance and
2 avail itself of the services of such employees of any New Jersey
3 State, county or municipal department, board, bureau, commission
4 or agency as it may require and as may be available to it for said
5 purpose, and to employ such stenographic and clerical assistants
6 and incur such traveling and other miscellaneous expenses as it
7 may deem necessary, in order to perform its duties, and as may
8 be within the limits of funds appropriated or otherwise made avail-
9 able to it for said purposes.

1 5. The committee may meet and hold hearings at such place or
2 places as it shall designate during the sessions or recesses of the
3 Legislature and shall report its findings and recommendations to
4 to the General Assembly, accompanying same with any legislative
5 bills which it may desire to recommend for adoption by the Legis-
6 lature.

STATEMENT

The purpose of this resolution is expressed in its title.

ASSEMBLYMAN H. DONALD STEWART (Chairman): We will now open the limited public hearing on Assembly Resolution 3017 sponsored by Assemblyman Raymond Lesniak, District 21 of Union County. Just to set the ground rules, this is a limited public hearing. Those who are testifying have been invited here to testify. It is not a public hearing where you come up and register. It is very possible that that type of a meeting will be held as we continue the deliberations on Assembly Resolution 3017. The purpose today is to try and educate this special Committee on the issue that Assemblyman Lesniak has brought to our attention. We will, therefore, have approximately five different witnesses who will give us some of the benefit of their information. We will start the meeting with Assemblyman Lesniak.

A S S E M B L Y M A N R A Y M O N D L E S N I A K: Thank you, Mr. Chairman, Assemblyman Donald Stewart, ladies and gentlemen.

The dumping and storage of hazardous waste materials is one of the most serious problems facing the State of New Jersey today. Over 15,000 companies in New Jersey alone produce 1.2 billion gallons of toxic waste materials each year.

Nearly every week we learn of additional sites where dumping, illegal and legal, has created an immediate or potential health hazard to area residents.

I want to thank you, Chairman Stewart, for recognizing this problem and your co-operation and support of my Resolution which requested an investigation concerning hazardous wastes, specifically the serious and dangerous situation in Elizabeth where over two million gallons of highly flammable, toxic and explosive wastes have been stored along the waterfront and where a health emergency requiring around-the-clock police and fire protection is now necessary.

Through the investigation of this particular situation, we can determine what laws and rules must be changed, implemented or added and what steps we must take to plan for future developments in this area.

I would like to broadly identify some of the areas which ought to be probed by this body: (1) Source of emergency funding for cleanup operations. The information that I have today indicates that the Department of Environmental Protection in this matter was overly concerned with what the cost to the State would be to take immediate action in Elizabeth and attempted to secure compliance by a corporation that was operating illegally for over five years. Since the only source of funding available was the department's own budget and the Oil Spill Compensation Fund - and that is only available in limited instances - we must look to the creation of another fund to handle emergency situations involving storage and dumping of hazardous materials so that action can be taken before the situation gets out of hand as it has in Elizabeth when dangerous conditions are discovered. Secondly, we must look into the system of State permits and inspections of licensed facilities to determine if the department is adequately staffed and whether proper procedures exist to uncover violations. Thirdly, we must look towards local permit systems and inspections and how the State can be informed of complaints made to local authorities. The best source of information in these matters is the local residents.

I'd like to refer you to an article in the Star Ledger and some of the quotes made by residents - "... even if we did complain about it, the city wouldn't do anything because they (Chemical Control) are going to store whatever they want anyway." Another resident claims, "something should have been done about this a long time ago." And another resident saying that complaints were made time and time again and nothing was done. If the State is not informed of these complaints, the State certainly can't act on them. And, since the State must ultimately bear the cost of these illegal operations, we must ensure that complaints are forwarded to the State so that another

agency will be aware of them. In my 16 months in office, no local or State official ever informed me that a problem existed. The Mayor of Elizabeth has requested action now that the severity of the problem has been revealed. It would have been a much better situation if State officials were alerted before the problem got out of hand. The next area is tracking of hazardous waste. Since New Jersey produces 1.2 billion gallons of toxic wastes a year, we ought to know what system exists for requiring that the producers of the waste deal with licensed approved facilities. Another issue is unlicensed facilities and illegal disposals. How large does the department believe the unlicensed facility or illegal disposal problem is and what can be done to curb it? And, lastly, the future. What plans must we make for future developments in the area of disposal of these wastes? What estimates are available concerning the production of hazardous wastes and the capacity of the State to dispose of them?

The importance of this investigation by this body cannot be stressed strongly enough. In Elizabeth, we are suffering because of years and years of illegal operations, in full view, about which the public had made many complaints. If we can't stop this type of activity from occurring in broad daylight, we will never be able to approach the problem of clandestine dumping which is infinitely more difficult to prevent. This situation could not have occurred without incompetence, gross negligence or corruption. This situation was allowed to develop over a period of years. The State discovered the situation. The State did not act quickly enough and swiftly enough to remedy it. An administrative order was issued in 1978 seeking compliance with that order from a company that was illegally storing materials year in and year out. I don't see how the State department could have been foolish enough to believe that a corporation that was dealing illegally with such materials for so long would voluntarily comply with that order.

We are confronted with a serious problem. And, I trust that this Committee will deal with it to determine the facts and determine what we must do to prevent these cases from happening again. Thank you, Mr. Chairman.

ASSEMBLYMAN STEWART: I see you are going to join us up here, Assemblyman, so what we will do is continue with the list of people whom we have requested to come before us. Our second witness will be Edwin Stier, Director, Division of Criminal Justice.

EDWIN H. STIER: Good afternoon. Normally when I speak to a Legislative Committee, I start out by saying that I am happy to be appearing before you to testify about the subject matter that you are interested in. I want to emphasize that today I really mean it. The reason that I emphasize that is because, finally, after two and a half years of full-time effort on the part of the New Jersey Division of Criminal Justice to develop a public awareness of the magnitude of the problem that we came across quite by accident, there seems to be now a concern developing in a number of places, including the federal government, and other governmental agencies who have a responsibility to deal with this problem.

I'm not faulting anybody for not having been as concerned as we have been over the last two and half years because frankly, I think, that when one looks at the nature of the problem it is hard to believe that it could possibly be going on - that people who are ostensibly legitimate businessmen could be placing, in a State as densely populated as ours, as serious a health problem as exists. Every day we learn a little bit more about the seriousness of the problem. Every day, it seems to me, it becomes a little more critical.

Let me tell you a little about the involvement of the Division of Criminal Justice in this area of enforcement. About two and a half years ago, I received a

telephone call from Public Utilities Commissioner McGlynn who asked me to arrange for State police protection for some of his PUC inspectors who were going to inspect a landfill area to look for illegal chemical dumping on that landfill site. It struck me as a little bit strange that they should require police protection. So, I arranged to sit down and learn a little more about it rather than simply authorizing policemen to accompany the inspectors. We had a meeting with Commissioner McGlynn, representatives of the Newark police and fire departments and some of his Public Utilities Commission inspectors. What we learned was that the Newark police and fire departments had been investigating illegal dumping within the city limits of Newark for quite some time and simply didn't know what to do about it. They had gone to government agencies and finally went to the Public Utilities Commission which had some jurisdiction over landfills and haulers of solid waste and asked for assistance. As a result, these inspections began to take place. What I learned from them was shocking. They had observed large quantities of toxic and otherwise hazardous waste just simply left by the roadside in areas where the population would be directly affected, in places where an explosion of some of these highly volatile chemicals might have caused very severe damage to property and the lives of people. To give you an example, they told us about one site located under the Pulaski Skyway where there were drums of an explosive material left. I couldn't believe that the information wasn't being overstated to a certain extent so we sent our own investigators to accompany them and asked for assistance from the Department of Environmental Protection. What we found, indeed, confirmed what they told us. Our surveillances showed haulers of chemical wastes simply depositing these wastes by the roadside, in vacant lots, in areas that were operated by such agencies as the Passaic Valley Sewage Commission - dumping tank truck loads of chemicals in areas where they obviously shouldn't have been dumped.

Let me tell you what I mean by toxic and otherwise hazardous wastes. I'm not a chemist, not an expert in this field. I've learned a little about it through our criminal investigation. I'm talking about chemicals which cause severe health problems if you come in to contact with them - they will kill you. They may be volatile; they may explode; they may cause severe burns; they may be poisonous. I'm not talking about chemicals that are simply noxious - chemicals that are unpleasant to have around. I'm talking about chemicals that include carcinogenic materials and otherwise will cause direct physical harm to individuals or property.

When I reported what we had learned to Attorney General Hyland, he recognized the seriousness of the problem. He scheduled a meeting. It was attended by representatives of the various agencies that I have identified. We discussed the overall problem. At that point, we assumed that we were seeing the most serious level of this problem, that is, the illegal dumpers, the people who would pick up these chemicals from generators - that is people who produce these chemicals - and instead of bringing them to a location where they could be legally disposed of, they would simply dump them in one way or another. I can describe for you the various ingenious ways we found that these people illegally dump these chemicals. When we discussed the problem with DEP, we believed that it was a direct result of the closing of Kin Buc. Kin Buc, as I understood it, was the only legitimate disposal site other than a recycling - someone who takes the chemicals, breaks them down and incinerates them - but the only land fill at which these chemicals could be dumped. So, it was the only place where they could be disposed of relatively cheaply. When Kin Buc was closed down at the order of the Department of Environmental Protection, it, of course, created a very serious problem for generators of chemicals who, if they gave these chemicals to people who had the technical ability to properly handle

them, would have to pay very large sums of money in order to have that done. So, a black market developed. People who operated tank trucks - 1 or 2 or 3 tank trucks - would pick up these chemicals at a price of fifty to a hundred dollars a drum from the generators, would imply that they were going to dispose of these chemicals legally but, in fact, were taking them and dumping them. We were told that the Department of Environmental Protection was developing a manifest system which system was intended to trace these chemicals from the point of generation to the point of disposal in order to make sure that they got into the hands of a legitimate disposal firm. We were also told that once this system was put in place, once the waste disposal industry got on its feet in New Jersey and was able to handle the volume of chemicals involved, the price would go down, a policing system would be in place, and this black market would be put out of business. We continued to conduct our investigations on that assumption. What we learned was that that was not all there was to it. During our surveillances, we traced these chemicals out of the hands of these illegal haulers and into the hands of licensed waste disposal companies. What we found was that in some cases, not all cases, the chemicals, once they got into the hands of the licensed chemical disposal company, were simply being illegally dumped, but in far greater volume because of their facilities and because of the amount of material that they collected in far greater volume than had existed when we were focussing on the hauler. Once we learned that, it added a whole new dimension to the problem. That is, the manifest system is based on the assumption that the people who are at the end of the chain, the waste disposer, is legitimate. That he is honestly going to report what he did with those chemicals and if he is not honest, then the whole system breaks down. At that point, we reported our findings to Attorney General Hyland. He called for another meeting. There were more discussions. As a result, plans were undertaken to begin to develop the resources that would police the system of toxic waste disposal in a more effective way. Then, we applied for federal funding. We in the Division of Criminal Justice have the only federally funded full-time criminal investigation unit working strictly on illegal waste disposals - the only one in the country. We have been in operation, on that basis, for over a year now. I was reluctant, frankly, to look for federal funding for that project because I think that there is a great danger here. That is that giving the responsibility to a law enforcement agency to deal with this problem as a criminal matter is very seductive. It means that everybody else can take the position that they don't have anything to worry about; it is in the hands of the Division of Criminal Justice; they will investigate it; they will prosecute those who are engaging in illegal activity and we can all go about our business. The danger of that is that we can't handle it as a matter of law enforcement. There is no way you are going to solve this problem in this State by leaving solely in the hands of the Division of Criminal Justice or any other law enforcement agency, the responsibility for policing this system.

I have urged and we are now in the process of discussing with both State and federal agencies plans to broaden what we are trying to do - put together a better coordinated system. I hope that that is going to bear fruit. So far, what we have done in the Division of Criminal Justice has led to a number of significant things happening. First of all, we have returned over the years six indictments in this area of major significance. They have included 12 individual defendants and 6 corporate defendants. The first one was returned in June of 1977 and it involved 2,600 drums of explosive and otherwise hazardous chemicals located on a pier in Jersey City, right between Manhattan and the most densely populated part of this

State. It took literally months once those drums of chemicals were found - literally months to remove them - not because nobody wanted to remove them but because they were so difficult to handle. They were volatile and dangerous. Every time we sent investigators in to a pier to obtain samples, we experienced very severe problems. That is, we had to hospitalize some of our people after they came into contact with this material.

The second series of indictments which occurred in September of 1977 included Chem. Control Corporation - the very company that has become the focal point of these hearings. In the course of prosecuting those indictments which were the first anywhere in the United States - criminal prosecutions for illegally disposing of toxic wastes - in the course of those, the operator of Chem Control, a man by the name of William Carracino was convicted and sentenced to New Jersey State Prison for 2 to 3 years, a very stiff sentence in comparison with other white collar crimes. But, the judge who tried that case recognized the serious health hazards that were created by this man's activities. Other defendants in that case were also sentenced to prison terms or received very substantial fines. We have been actively looking at this company since September of 1977. And, although the corporate officers have changed, the operators have changed, there has been a consistency in our looking at them from a criminal prosecution standpoint and that has continued right through today. In November of 1977 we indicted a company for illegally disposing of carcinogenic chemicals which were located right next to the water supply system for the city of Perth Amboy. If you will think back to that time, you will recall that the water supply system in Perth Amboy had to be shut down because they located carcinogenic chemicals in that supply.

In February of this year, we indicted another waste disposal firm Scientific Chemical Processing Incorporated. That case is still awaiting trial and I cannot make any further comment about that case.

This problem should not be oversimplified. It is of enormous magnitude and enormous complexity. From a criminal investigation standpoint, the issues are pretty clearcut. These investigations are extremely difficult. We have to engage in 24 hour surveillances under very difficult conditions. Our investigators, from time to time, have to spend 24 hour periods on garbage dumps in order to surveil truckers who are hauling these chemicals who wait until the early morning hours to do it. Our investigators also have to engage in other very difficult activities in order to successfully investigate one of these firms.

If you recall, in Elizabeth last month, we executed a search warrant at another plant, Iron Oxide, for the purpose of looking for - and we found - the illegal disposal of large quantities of toxic chemicals.

But, from our standpoint the issues are pretty clearcut. Somebody is violating the law, we investigate them and we prosecute them. The broader issues are more difficult. This State has something like 15,000 firms which generate hazardous waste, a statistic that I think was mentioned in your report, Assemblyman. As I understand it, our best estimate is that they generate 1.2 billion gallons of liquid chemical wastes. I don't want to get too deeply into statistics. You have people from the Department of Environmental Protection who are going to testify and I'm sure they will be able to give you more accurate figures. But, it seems to me that unless we develop a coordinated, cohesive program dealing with this problem, we are not going to be able to properly balance the interest of maintaining a healthy industrial economy in this State and our interests protecting the public from the health hazards which flow from the disposal of their byproducts. I think

that we have begun to make progress. I'm very glad to see that the public has now become as conscious of these problems as it now has become. I know that there are going to be legislative proposals which we are going to be making and I'm sure many that others will be making which will assist in that process. We already have an amendment to the penal code which is going to be offered to the Legislature asking for increased penalties for violations in this particular area. I'm sure there is a lot more that can be done. I'd be very happy to offer the resources of the Division of Criminal Justice to work with this Committee to assist in coming up with that kind of a comprehensive approach. Thank you.

ASSEMBLYMAN STEWART: Thank you very much. One of the questions that comes to my mind right off the bat is that it appears from getting involved with the problem in Elizabeth, that we might be just touching the tip of an iceberg and this is a problem that is a lot bigger than this specific issue. Has your investigation indicated, one way or another, how widespread a problem this is in New Jersey?

MR. STIER: Well, it is easy to exaggerate something like this and I don't want to do it. I don't want to use terms that are easy to say but which may be an overstatement. I don't want to be an alarmist. But, I can tell you this. We have found this problem to exist not just in Elizabeth but in a number of parts of the State - the Meadowlands, Hudson County, in Essex County, right in the city limits of Newark, as I've described for you, in the Pine Barrens of central and southern New Jersey, as far west as Sussex County. Any place where these people can get away with it, they will illegally dispose of these chemicals. We found situations where, on rainy evenings, a tank truck driver who has his tanker loaded with toxic waste will simply open the valves and ride down the highway and dispose of the chemicals right along the highway. We found drums of chemicals offloaded on major arteries in the State. How widespread it is, is very difficult for me to estimate. But the thing that concerns me the most is that the people in whom we place so much confidence, the recyclers, cannot all be trusted. I want to re-emphasize that there are people in this business who are legitimate, who are concerned about providing proper handling of these chemicals. But, there are others who are not. We have got to deal very effectively and directly with them.

ASSEMBLYMAN STEWART: I would think that some of your ideas to strengthen the State's hand legislatively is a subject we can probably discuss, and take you up on your offer, at another time. The only other question I have is - do we have any system of checks and balances with the company who actually generates these materials? For instance, let's say that company X is one of the largest chemical companies in the State. Can they just hire an independent trucking firm to haul this material out of their facility without checking first to find out if this is a State-approved hauler? Are they off the hook once it is gone from their facility?

MR. STIER: It would be better if the representatives of the Department of Environmental Protection which has the regulatory responsibility in this area dealt with that directly. Let me just make some general observations from what we found. I think, at this point, they are not sufficiently on the hook. The raw legal requirements may be on the books but we just don't have the resources, or the resources aren't available, to properly enforce it. Secondly, if you can't trust the people who are licensed at the end of the chain to handle these properly, then that does let the generator off the hook so long as he makes arrangements to put the chemicals in the hands of the waste disposers. I don't believe that the generators of hazardous waste byproducts have taken enough responsibility, have taken enough concern. It doesn't hold true of all of them. In our early days of investigation

we got a good deal of cooperation from generators who were concerned about what was happening to these materials. But, it seems to me that the people who produce it ought to bear more of the responsibility for what happens ultimately to these chemicals. That is one of the things, I think, that we and the Legislature ought to be working toward.

ASSEMBLYMAN STEWART: I guess what I'm trying to get at is did any of your studies indicate that any of the major generators knew well in advance that the person who was doing their hauling was not a legitimate operation?

MR. STIER: Yes. At the early stages of our investigation before the manifest system was in place, that was true. Today, under the manifest system, I am not sure it is as true because they do have more responsibility for what happens to these chemicals. But, there is no question that anybody in the chemical industry has got to recognize that the facilities simply aren't available in this State to properly dispose of all the material that is generated. All you have to do is add up the figures - the amount of gallons produced and the amount of gallons that can be properly disposed of - and you have to come to the conclusion that there is a substantial amount of illegal dumping going on.

ASSEMBLYMAN LESNIAK: Thank you, Mr. Stier. I know you have a very difficult job and I know you have been working at it hard. Your department has been doing a good job recently. As far as the manifest system, do you believe that that, as a procedure, is sound but that you or the department do not have the proper staff to enforce it?

MR. STIER: Let me make a distinction here. We don't enforce the manifest system. I see the manifest system strictly from a criminal investigation standpoint and I see weaknesses in it. I understand from the people in the Department of Environmental Protection with whom we work and who are present here today, that there is insufficient staff to properly verify the information that exists in the manifest system. Unless the manifest system is accompanied by very stringent follow-up procedures, that is, you get someone to go out and verify what the manifest system says is happening, unless you have that, it seems to me, that that is a fatal flaw in it. That is my personal point of view after having observed the waste disposal industry from a criminal investigation perspective.

ASSEMBLYMAN LESNIAK: You also said it does have some weaknesses. What weaknesses were you referring to?

MR. STIER: That's basically what I've said. The absence of sufficient follow-up resources to go out and verify what is happening. Of course, I'm not sure at this point that the system is fully operational. I don't know that it has been computerized as it was intended to be so that the analytical work that has to accompany the manifest process is taking place. Let me just amplify that. As I understand it, the manifest system collects information which is then tabulated and analyzed. If you don't have the resources, including computer services, to tabulate and analyze that all you've got is a pile of paper there. If nobody looks at it, what value does it have? In addition to that, you've got to have the capacity to go out and follow up to verify what is reflected on those documents in order to make sure that people are honestly reporting what is happening to the chemicals.

ASSEMBLYMAN LESNIAK: You said that any place where they can get away with it - you are talking about those people who illegally dispose - they will dispose of it. What are your main sources of information regarding sites of illegal storage and disposals?

MR. STIER: Well, I don't want to get into too much detail on ---

ASSEMBLYMAN LESNIAK: I'm not asking you to reveal your ---

MR. STIER: I realize that. We have developed a number of informants who have very detailed information that we use as the basis for an investigation - people who know the industry. We receive complaints from the public about locations that are used illegally as disposal sites. We receive information from DEP, from EPA - referrals that they receive through their inspections or complaints and it is that which gives us the basis for conducting an investigation.

ASSEMBLYMAN LESNIAK: Is there a system for referral of complaints made either to local officials, governing bodies, or the State governing bodies, to your office? If not, do you think there ought to be?

MR. STIER: I think that there ought to be a much better system than there is. The system that exists at present is a working relationship that we have developed with the federal government so there is some exchange of information back and forth - some coordination between ourselves and the U. S. Attorney's Office. I have spoken, personally, to each of the twenty one county prosecutors. I told them of our concern for this problem and asked for their assistance and for them to forward information to us. We do receive a certain amount of information from the county prosecutors. We have not adequately reached most of the local police departments, most of the local officials in this State, in order to obtain information from them. Newark has been extremely helpful. As I said before, they are the ones who initiated our interest in this problem and have worked very effectively with us over the years. I can't speak highly enough of the Newark fire and police departments. Other agencies either haven't seen the problem, haven't recognized it for what it is, or simply have been so frustrated by an inability to deal with it that they simply haven't come forward with information.

ASSEMBLYMAN LESNIAK: One last question. You said that Mr. Carracino was prosecuted and is serving time now.

MR. STIER: I didn't say he was serving time. His case is on appeal. He was sentenced to 2 to 3 years in the State prison and his term has not yet commenced because he is out on bail pending appeal.

ASSEMBLYMAN LESNIAK: When the corporation changed hands how was it accomplished? Was it a sale?

MR. STIER: I would rather not discuss that because that matter is, as I said before, still under investigation by us.

ASSEMBLYMAN LESNIAK: Do you have any information to give us regarding the current operators?

MR. STIER: No information that I can disclose.

ASSEMBLYMAN BARRY: Mr. Stier, you referred to a specific instance of a truck traveling down a road on a rainy day and dumping the contents of his tank. Was that particular trucker or trucking company named in one of the 6 indictments?

MR. STIER: Yes.

ASSEMBLYMAN BARRY: It was? I was somewhat interested in the extent of your investigation. It seems to be quite extensive and yet I wondered if it might not be particularly difficult to accumulate sufficient evidence to indict these companies. Six seemed to me to be less than we might otherwise have.

MR. STIER: These investigations take many, many, many months. And, I included all the manys that I thought was appropriate to describe the length of time that it takes. It requires 24-hour surveillance. You have got to reach a

point where you can establish - not that the truck driver is the one who is committing the crime - that the crime is being committed by the people who are operating the corporation; it's a matter of corporate policy. In these waste disposal companies, it becomes extremely difficult. Because, in order to develop evidence of that, you have to conduct detailed surveillances and you have to see what is going on inside the company in order to learn whether or not something is happening - a process is taking place inside a plant to properly dispose of these chemicals - or whether, as we found in some instances, these chemicals are simply being pumped out into waterways and into the sewer systems of the State. So, that takes a long time in order to build up the case - not against the truck driver, those cases are fairly easy - but against the people who are making money, from the people who are setting corporate policies; they are the difficult defendants to successfully prosecute.

ASSEMBLYMAN STEWART: Thank you very much, Mr. Stier. Next we have several representatives from the Department of Environmental Protection. Dr. Glen Paulson, Assistant Commissioner of the DEP will be our witness. Dr. Paulson, if you like, you can let the Committee know the names of the fellow members of the DEP whom you have with you.

DR. G L E N N P A U L S O N: We have assembled a set of materials which I will place in perspective in the course of some very brief prepared remarks. We also have a small slide show which is part of our presentation. I'd like to precede the slide show with a more general presentation as well as some specific information on the Chemical Control facility which is the facility of the month, I guess it is fair to say.

Mr. Chairman, members of the Committee, the Department of Environmental Protection appreciates the opportunity to testify today on the subject of hazardous waste treatment and disposal. You are undertaking a very timely review of the hazardous waste problems facing this State and this nation today, perhaps, precipitated in our own State by the public attention focused very recently as a result of our enforcement action and other steps regarding a specific hazardous waste facility known as the Chemical Control Corporation in Elizabeth. We are prepared to discuss that particular problem in detail today, but, with your permission, my opening remarks will deal more generally with the broader issues of the proper treatment and disposal of hazardous chemical wastes created by our industrialized society.

Due to the fact that the largest single portion of New Jersey's economic activity is related to the activities of the chemical and petroleum industry, it is of paramount importance to the health and welfare of our citizens, as well as to the continued economic viability of that large industry, that we provide in New Jersey for the adequate treatment of the hazardous wastes that are produced. For too long society has ignored the hazardous residual materials generated by the chemical and petroleum industry. For too long there has been a lack of leadership in direction by the industry and by the government in providing the means for the adequate treatment of these wastes. For too long there have been too little resources, both in dollars and in manpower, devoted to getting any meaningful grip on this problem. Just by illustration, at the federal level this problem was first recognized with the passage of the Resource Conservation and Recovery Act only three years ago in 1976. This set into motion a federal program which uses state and local governments as partners in developing and regulating resource recovery and hazardous waste treatment facilities. The law was based on the

recognition, overly long-delayed in my view, that we could not continue to use our lands in such total disregard for the consequences of the dumping of hazardous wastes that our society has for so long practiced. More than two years into the implementation of this federal law, we unfortunately still do not have the required federal hazardous facility regulations and we cannot expect those regulations to be completed until early next year, thus, leaving for a while longer a very large gap in the regulatory scheme to control and dispose of such materials. In New Jersey in our department, our efforts in focusing on hazardous wastes began approximately 3 years ago with the creation of the Solid Waste Administration within our department to give a higher level focus to the waste problem in general, both traditional trash and chemical wastes in New Jersey.

In 1976, we closed the now infamous Kin Buc landfill. We also adopted in 1978, the manifest system to begin to track wastes from the cradle to the grave, if you will. However, as was discussed earlier by the previous witness, we are hamstrung. I think in all candor I have to tell you that we are hamstrung in the use of that system in the total way it could be used primarily because only two states on the east coast have adopted manifest systems, New Jersey and Maryland. And, because, at present, 70% of the hazardous wastes produced in New Jersey by our chemical industries, are sent out of the State for treatment and disposal where we are unable to track it because of the absence of similar situations in other states. This is another loophole which we believe will eventually be closed by the federal regulations I referred to earlier.

In December of 1978, we proposed hazardous waste facility regulations because we could no longer wait for the federal government's action, in our view. Coincidentally, right on the heels of our suggestions came a proposal from the federal government which bears a very close resemblance to many of our own ideas. These rules will set design standards, require engineering plans, require an escrow account for facilities to provide monies should the facility have operational problems, and in addition provide a special account be created which would be used to correct any problems resulting after a facility's closure. We are now carefully considering comments received on those proposed rules and will be deciding what we believe the public requires.

Historically, hazardous waste has been treated as though it were common domestic refuse or garbage. Unfortunately, we have in the country many cases where this domestic refuse has also contained what we would now consider hazardous wastes and that these materials have been buried with the trash in the ground. Thus, more and more we see evidence of what we have come to term "time bombs" raising their ugly heads and touching the conscience of our society for what we plainly see now was stupid and irresponsible past action. This legacy must be dealt with. The federal government is at present considering a special national cleanup fund that would be used for cleaning up the results, the remaining impacts, of these past practices. New Jersey strongly supports that concept.

However, I must note that if we want a key example of activities that add to inflation, we have it very neatly personified in this problem. Instead of making prudent investments in prevention in earlier years, we are now faced with the enormous much larger costs of cleanup. The U. S. Environmental Protection Agency Administrator, Doug Costle, in a recent speech which is one of the items we have given you, presented some examples of this. The Love Canal situation in New York, perhaps the most famous in the entire country - famous example of improper chemical waste disposal - has already cost New York State directly twenty three million dollars. That does not include the cost of human misery, disease, and suffering that has occurred. EPA

estimates that proper treatment in disposal at that time would have cost about two million - one tenth of the bill so far. Of course, that two million dollars for adequate treatment at the time compares with the much cheaper costs of Hooker Chemical Company for the disposal in the manner which has now given rise to all the problems these many years later. Other examples. Disposal of PCB-laden oils on roads in North Carolina will cost an estimated two to twelve million dollars to clean up, whereas the proper treatment of these oils in the first place would have cost a relatively modest one hundred thousand dollars. The notorious Kepone case in Virginia - the contamination of the James River - has already resulted in twenty million dollars in claims against the Allied Chemical Company for damages, and it is doubtful whether further investment of up to several billion dollars - with a B - will ever adequately clean up the James River and make the fish and shellfish acceptable for human eating. The estimate to prevent this disaster from occurred is, by comparison, the paltry figure of two hundred thousand dollars. These are but a few of the examples. We could extend the list today substantially and I can confidentially predict that we will find more in this country as time goes by.

I have submitted to you a copy of the recent report prepared by the Environmental Protection Agency that outlines the many hundreds of potential problem sites in the country and which contains an outside estimated cleanup cost of potentially up to fifty billion dollars to adequately handle these facilities.

Thus, we have two major problems in this field. One is dealing with the actions of the past that are giving us our present problems and the second is the need to develop a regulatory scheme - a legally sanctioned scheme with adequate support - with incentives to create a reputable, respectable, and cost-efficient hazardous waste treatment capability in this nation. It is no secret that lacking the resources in cleanup facilities has been a hindrance to enforcement strategies. As a result of a lack of cleanup capability on the part of all levels of government, administrative agencies have been forced into the posture of extending every opportunity to the private sector actors in this game to clean up their own acts before taking such steps under law that can potentially force the industry out of business and leave the problem for government to deal with. The Chemical Control Corporation in Elizabeth is an example where every opportunity under law had been given to the corporation to clean up their act and they failed to follow through in a responsible manner. Thus, we had set the stage for the actions that we have now taken through the courts which have resulted most recently in actually taking on the job of removing the hazard that exists at this site. In other words, that particular case is now a problem of government not a problem of the private sector. That is not the way it should be in an orderly system. We have been diligent in our efforts with that facility since we took control in March in developing a safe and orderly plan for action for cleanup. We have used resources from many other department efforts in addition to those of the Solid Waste Administration to assist in these. We have received cooperation and direction from the city of Elizabeth in the exercise of their powers to control the problem and we received approval to use the State's Spill Fund to identify and remove leaking drums of chemicals from the site.

It was during this first effort funded by the State's Spill Fund in the month of April that we discovered the true dimension of the problem. The discovery was of many potentially explosive materials, not just hazardous chemical waste, on the site. These materials did not show up in the earlier records of the corporation. We had no knowledge that they were there from any of the information previously available to us. It was only in the very practical steps of lifting the lids of drums and looking that we found these materials. This has drastically changed the

character of the problem that we are dealing with and required us to call on additional special expertise from throughout the country to help us in our efforts. The U. S Alcohol, Tobacco and Firearms Agency - this is the U. S. Treasury's bomb squad, if you will - has been providing most valuable assistance in helping us remove these explosive materials. We expect to receive assistance from the Edgewater Arsenal, this is the military's major source of expertise on explosive materials. The federal government is providing other technical aid through the Federal Emergency Task Force which has convened on this matter and met on Monday. And we have recently received the cooperation of the chemical industry in New Jersey in the form of creating a special Chemical Industry Advisory Council to help us with technical advice and in making the difficult decisions on the removal of this most risky material. We announced the creation of that task force yesterday. Its Chairman is James Brannon, the Secretary-Treasurer of the Chemical Industry Council in New Jersey and it includes members as of this moment from Allied Chemical, American Cyanamid, Tenneco, Witco Chemical, and Linden Chemicals and there probably will be others added. We anticipate convening that group later this week for a full discussion with them of the facility and its history and taking them to the site as well so that they can provide us with focus and practical advice.

Further, it is our belief and position that any material found on site that can be identified as formerly belonging to a specific company should be removed by that company and taken elsewhere for suitable treatment and we expect New Jersey's industries to cooperate. In fact, two of them where we have found material with their labels on have already visited the site and have agreed, in a very cooperative manner, to come and get the material as we segregate it from the large quantity of drums at the site. However, our realistic expectation has to be that a very large quantity of the chemicals will remain that will not be readily traceable to their original owners and that the cleanup cost for this material where we cannot find the owners could range into the millions of dollars. Any such estimate has to be fraught with uncertainty because most of the drums which you will see shortly simply cannot yet be seen. We can only see a small percentage and inspect even by eye a very small fraction of the material that is there. In addition, since the court order against the facility, we have had surveillance on the site, first by a team of DEP inspectors augmented by city inspectors and police and fire personnel, then through an around-the-clock guard service, and presently, with the finding of these new explosive problems, the staging of local police and fire personnel on the scene around the clock to provide the surveillance and emergency services should they become necessary.

At present we recognize the need to clean up this facility. At the same time, and just as important, we recognize the need to be cautious based on the materials that are now being discovered. The thrust of our efforts today, this week, and for the near future, will be to defuse the situation by removing the dangerous and explosive materials. Some of the leaking chemicals will also be disposed of during this period. The fate of the remaining drums of chemicals on site remains a question until we identify more precisely both the nature of these materials and the cost and facilities appropriate for their disposal.

I hope these remarks have put into perspective our concerns and actions with respect to the general hazardous waste problems in the nation and in New Jersey. We are prepared to answer any questions that you have to the best of our ability either on the broad scope that I've discussed or on the Chemical Control facility in particular. With me to aid in that is Assistant Commissioner Paul Arbesman to my right, Beatrice Tylutki, the Director of the Solid Waste Administration, to his right,

Dr. Ronald Buchanan, the Chief of our Bureau of Hazardous Waste Control, to her right, and Karl Birns, the Chief of our Office of Hazardous Substances Control and the individual in charge of the on-site activities. At this point, I'd like to ask Mr. Birns to give you just a very brief slide presentation that shows the nature of the site, the history of it in pictures - one picture is worth a thousand words - and also some slides showing the nature of the activity these days since the discovery of the risky aspect of the job.

(SLIDE PRESENTATION)

That concludes our prepared presentations, Mr. Chairman, and we are ready for any questions you may have.

ASSEMBLYMAN STEWART: The first thing that comes to my mind is - maybe some of the members of the Committee are more aware of the whole scenario at Chemical Control than I am but - how long has this been going on at this site? Do we have any idea of how long that material has been sitting there?

DR. PAULSON: The accumulation of the materials?

ASSEMBLYMAN STEWART: Yes. Is there any evidence that they ever took anything out of there or has it always just stayed there?

DR. PAULSON: Yes there is. But let me ask Assistant Commissioner Arbesman and Director Tylutki to give you the details you want. We do have, as part of the package, a document describing the history of the facility and our enforcement action which hits the highpoints. But, perhaps a summary would be useful.

P A U L A R B E S M A N: Assemblyman Stewart, in answer to your question, there is an on-site incinerator at the facility. The facility was a chemical processing and treatment plant. It was not primarily used for storage. Drums were stored until they could be incinerated. That was the main theme for the facility. In some of the pictures you could have seen the smoke coming out of the stack. Wastes were incinerated all along the life of this facility. We have given you, as Glenn indicated, a summary of the actions by the department going back through the years. I will have Beatrice Tylutki give you an overview of that summary in a very short fashion. I think it is safe to say that the problems of this facility evolved after the new management took over - as you heard Mr. Stier testify about the indictment of the previous owner Carracino. The record, as I understand it, indicates a buildup in drums beyond what was there at that time for normal processing which led, after a number of investigations, to our administrative order of the department in March 1978. Since that time, the administrative order required cleanup of the site. The drum total has been fairly stable, again, it is my understanding. However, there was no cleanup accomplished by the company. After a number of go-rounds in that regard, we wound up in court which was the action that was described and resulted in a court order putting the company in receivership. The first court action which required cleanup on the part of the corporation, also did not have any effect in terms of cleanup. Bea, maybe you'd like to run down the details a little more specifically.

ASSEMBLYMAN STEWART: Bea, when you summarize that, could you indicate whether any of your studies indicate to you whether or not some of the major generators of this waste were aware of what was going on there? I think that would be interesting.

B E A T R I C E T Y L U T K I: It may be helpful just to go back a little in history and go to the essence of where solid waste started as a State program. In 1970 the State of New Jersey passed probably one of the most comprehensive State statutes dealing with the handling and disposal of waste materials, which included by definition all types of materials. Until that time, landfills or other facilities for handling wastes, were not subject to any State licensure, but were subject to whatever controls local government required. The initiation of the program, the responsibility of which was given to the Department of Environmental Protection, was by the creation of a bureau within the department with approximately 6 to 12 people in its start-up and with a budget of about ninety thousand dollars. This group of people spent most of the time from 1970 to 1974 primarily concerned with landfills and the proper management and regulation of landfills. Quite frankly, we are not even able to do an adequate job in that area because of the lack of enough people and money.

In 1974 the bureau expanded its horizons by requiring a number of these chemical waste treatment facilities to come in and file an application for registration. One of them was Chemical Control. The Chemical Control facility from that point on to the present was subject to inspections by my office. Those inspections were conducted in the early days by landfill inspectors using a form which was developed by the bureau for landfills. They were looking at the facility under regulations that were also primarily for landfills. Recently, we recognized in the last three years, with the creation of the Solid Waste Administration, that something had to be done in this area. We have been progressing to establish a hazardous waste office within the Solid Waste Administration. In 1976, Dr. Buchanan was hired to run this operation. It started slowly and we are now up to a team of eleven people. These eleven people have the responsibility of not only reviewing engineering plans and applications for these facilities but inspecting them as well as doing everything we can to find illegal dumping and handling that element of the entire problem. I think you realize that the staff and the program are not sufficient to meet the kinds of problems we are experiencing in this State.

I think Chemical Control is an example of the kind of problem we have had. In 1974, they filed an application for registration. And - as I said - since then they were subject to inspections. In the early days, the storage of drums was not out of line with their activities. They brought wastes, they assembled them, when they accumulated enough of a certain type, they were sent through the incinerator for destruction. They also brought in solvents for purpose of fueling the incinerator for destruction. In 1977, in the latter part while Mr. Carracino - whom you heard was indicted - was operating this facility, this storage increased to a number of twenty six thousand and then blossomed to the current approximately forty thousand drums that are now on site. When Mr. Carracino was indicted, the owner of Chemical Control, the parent company, took over the operation of the facility. They came to our office in the latter part of 1977 and indicated that for the first time, they claimed, they became aware of the problems on Chemical Control site. That, they had up until that time relied upon Mr. Carracino to conduct the business. They also indicated that they intended to operate a proper facility and that they would immediately undertake the cleanup of the mess that was there. I think a great deal of credence was given by my office to their representations. There was no doubt in my mind that there was a need for hazardous waste facilities in this State. You have already heard that 70% of our hazardous waste now has to be taken out of State for destruction. There is need for facilities. A facility that already has an air permit has a certain advantage because air permits for an incinerator are hard to

come by in this State today because of the air pollution regulations. So, we felt that as prudent businessmen and as businessmen who intended to make a profit, they were going to undertake a cleanup such as we required of them.

Initially, the goodwill they exhibited resulted in very little in the field. So, my office on March of 1978 issued an administrative order - roughly about 4 months after the parent company took over. That administrative order required them (1) to clean up the site and (2) to immediately take steps to reduce the inventory of drums that they had on the site. Again, there was an indication by the company that they would be complying. We were inundated with reports showing reductions, we were inundated with reports indicating that they were having problems with their incinerator and were investing money to bring it up to grade so that it could be used to destroy this material.

As time passed, it became very, very clear to us that they were not complying and we started toward another administrative order or court order. We then decided it had to be through the courts since they had not shown a willingness to comply with an administrative action. We also at that point, being cognizant of the potential for fire and explosion, hired a consultant to look into that element. All of this material was assembled and handed over to the Attorney General's Office who took legal action in January of 1979. That, very, very briefly, is a summary of the background to this. I would be more than happy to elaborate on any point.

ASSEMBLYMAN STEWART: From the time you realized there was a problem there, did material keep coming in?

MS. TYLUTKI: Yes.

ASSEMBLYMAN STEWART: Did it come in from some of the major companies in this State who should have known better? I'm not talking about the little guys who give us the problems.

MS. TYLUTKI: The answer to that is yes. I would like to elaborate a little on the manifest system which was started in this State in May of last year.

ASSEMBLYMAN DIFRANCESCO: In 1978?

MS. TYLUTKI: Yes, in May of 1978 we started the manifest system. Prior to that time, we were cognizant that there were a lot of problems with the illegal disposal of hazardous wastes. We were also cognizant that generators frequently felt that they were not responsible for this problem since they, "sold waste to the hauler and then it was the hauler's responsibility for proper disposal." What we did in creating the manifest is initiate a responsive requirement on the generator of the waste - on the waste producer. The manifest system requires that producer of waste to identify the waste time and also identify, in his portion of the manifest, the name of the hauler, the acknowledgment by a registration number that that hauler is registered by my office to handle hazardous waste materials, and also where that hauler is to take this waste. And, if it is a New Jersey facility, the registration number of that facility then requires him to know that that facility is registered by us to handle the waste. The problem with the manifest system, as has already been elaborated upon, is the fact that most of the waste is now going out of State and the other states in the immediate vicinities do not have the kind of reporting system that permits us to trace this waste with the same kind of identification that we require. The further problem with the manifest system is the knowledge that we have gained through our own investigations as well as our working with the Attorney General's Office, that many generators, haulers, and disposers do not avail themselves to the legal methodology and do not even identify themselves. So, they are not even

in the system as we have initiated it. The manifest system, since May of last year, has tracked a number of waste materials to the Chemical Control site. Dr. Buchanan has assembled the list of names. They do include many of the larger chemical companies in this State.

ASSEMBLYMAN DIFRANCESCO: On that manifest system, Dr. Paulson just said that in 1976 you closed the Kin Buc landfill. When in 1976?

MS. TYLUTKI: I believe July of 1976.

ASSEMBLYMAN DIFRANCESCO: Now, I believe the representative of the Division of Criminal Justice indicated that the closing of Kin Buc contributed a great deal to some of the problems that we have with respect to, for example, Elizabeth. Is that right?

MS. TYLUTKI: In part it has.

ASSEMBLYMAN DIFRANCESCO: O.K. Then when we closed the Kin Buc landfill why wasn't this system immediately adopted? You had to have had an inkling that they had to do something with this stuff. If they can't take it to the Kin Buc landfill, where are they going to take it?

MS. TYLUTKI: Let me say, Kin Buc was the last remaining commercial landfill existing in this State that took hazardous and chemical waste material commingled it with garbage or domestic waste for disposal. At the time we closed Kin Buc, Kin Buc was taking approximately sixty million gallons of chemical and hazardous wastes on an annual basis. We had evidence and reports that indicated that waste not only came from New Jersey but came from a ten state area. We were receiving into Kin Buc hazardous waste from as far west as Ohio, as far north as Maine, as far south as the Carolinas. With the closure of Kin Buc, we obtained from Kin Buc a list of their regular customers. We initiated, after the closure of Kin Buc, a system whereby we surveyed those companies and found out where they were taking their waste. The regular customers of Kin Buc reported to us through our survey that all of the waste that they were taking to Kin Buc was then redirected to out-of-State facilities, many of which even today still permit what Kin Buc no longer is authorized to do, namely, putting it on a domestic waste landfill for disposal.

ASSEMBLYMAN DIFRANCESCO: Did you find today that these representations were true, that, in fact, most of it is going out of State?

MS. TYLUTKI: The problem with checking those representations is the problem of the unevenness in the reporting requirements among the states. We now have learned that hazardous waste must be carefully monitored and have established a manifest to do so.

ASSEMBLYMAN DIFRANCESCO: Well, you must have known that in '76 too.

MS. TYLUTKI: I think we did but an acknowledgment of that does not mean that the next day we have a system in place to do this. We did hire a consultant in '76 to establish a hazardous waste program for us. The program consisted of the survey, the creation of a manifest system, the creation of hazardous waste regulations, and we have been proceeding with establishing that program and bringing it into effect. However, in 1976 the State budget for hazardous waste was zero and we had a \$75,000 federal grant to start this program. We have now developed a program. It is an infant program. There is no doubt it is not as elaborate or as extensive as it should be in order to correctly monitor this program. It is, frankly, one of the best in this area. Part of our problem is that we cannot dovetail with the other states that do not have the detailed program that we have. So, today, where I have the manifest system saying a certain waste is going out of State, we can talk to the people out of State and they will tell us the facility

it is destined for is licensed but we cannot get from them a guarantee that that exact shipment is received. They are not yet set up for this purpose. The federal regulations that were already mentioned, which are intended to go into effect at the end of the year, will require a national manifest system.

DR. PAULSON: Your question triggers in my mind an additional response. In this chamber and in the one down the hall over the last several years as well as elsewhere in the country, there have been a lot of charges regarding the costs of over-regulation - inflationary costs, needless regulation, and so on. Our department is sensitive to those concerns. It is one of the reasons why we have on many different issues, including this one but not limited to this one, asked for uniform federal requirements that would be evenhanded in their impact throughout the country and at the same time protect the public health, public safety, and the environment throughout the country. We have, on occasion, in New Jersey seen needs which we thought needed to be addressed in advance of federal action. And, where we have seen those needs and the initiative made sense, we have not hesitated to act. In this context a little over two years ago, on the basis of the then-recently passed bill Compensation and Control Act, we proposed some rules regarding spill prevention plans and requirements at a wide variety of facilities, including ones of this sort. These were bitterly opposed by many. And, because there was no public support and a lot of public opposition, they were not adopted. It was an initiative that failed. The public will was not in favor of that initiative at that time. Had those rules been adopted, I'm quite confident this facility would have been found far earlier in its history. I see a direct cause/effect relationship to the development of this problem at this facility and the lack of acceptance of a broad regulatory initiative that we thought the circumstances in this State warranted. I dare say there will be other examples of that sort. It is conceivable to me that what has happened regarding the public recognition of this problem - the Love Canals, the Valley of the Drums, I guess we will be adding the Chemical Controls of the country to the list - may change the public attitude in this State and in this Legislature, for that matter, and in this country on what should be acceptable now. It may redefine the ground rules for taking steps that many of us have seen as necessary - long overdue for a number of years. In that process, by the way, this Committee can play a critical role.

ASSEMBLYMAN BARRY: We have really highlighted the problem in Elizabeth. I wonder if you could tell us how many other sites statewide are currently under investigation by the department?

MS. TYLUTKI: I think the Attorney General's Office through the Criminal Investigation section has clearly indicated that in addition to those facilities and that amount of waste we know is being, "handled through the legal structure" there is an additional amount that is now being handled illegally. So, it is very hard for us to give you an exact number. What we now have in the State of New Jersey is approximately eleven facilities that carry a temporary authorization for the handling of hazardous waste materials. Two of those facilities are fairly large in size. They are Rollins Environmental Services in south Jersey and Earthline in Newark. Most of the other ones are small facilities with a limited amount of materials that they can handle. In addition to those facilities, we have recently denied new temporary authorizations to approximately ten other facilities all of whom have now challenged our activity. Some have started legal cases requiring us to give them a second temporary authorization. In addition to that element, we do participate with the Criminal Investigation Office of the Attorney General's Office

on a regular basis in following up on illegal disposal activities. We have several of those illegal facilities now under either administrative order or in the courts ordering them to clean up. I don't think there is anything that we know of in the State quite on the same level as Chemical Control. We do know there are drums in the State in these facilities and we are now watching them to make sure that we do not have another Chemical Control created. That is not to say that tomorrow somebody will not find a non-registered facility somewhere in this State of the magnitude of Chemical Control.

ASSEMBLYMAN LESNIAK: I have quite a few questions to ask as you might imagine. First of all, can we gain access to all the inspection reports that were made since 1974?

MS. TYLUTKI: Surely.

ASSEMBLYMAN LESNIAK: First of all I'd like to make a comment. I find it incredibly naive of the department to state that the parent company, in good faith, represented that they had no idea what the subsidiary was doing. Even if you believed them, you had to come to the conclusion that that was a terribly incompetent and grossly negligent company and that you should not have relied on any type of representation to clean it up. But, I do want to get some facts. Thirty thousand drums in 1978 on bureau administrative order - that was your estimate. What was the increase from that administrative order until the current day?

MS. TYLUTKI: Basically, there has been no real increase - a few more drums.

ASSEMBLYMAN LESNIAK: How many inspections were made from the time the administrative order was issued to this date? Do you have regular weekly or bi-monthly or monthly inspections made of the site?

MS. TYLUTKI: I'd like to refer that to Dr. Buchanan. There have been eight inspections on that site by my office. However, in that same period of time there have been other groups within the department who have been looking at this site.

ASSEMBLYMAN LESNIAK: When was the first inspection after the administrative order?

MS. TYLUTKI: May.

ASSEMBLYMAN LESNIAK: Two months later?

MS. TYLUTKI: That's right.

ASSEMBLYMAN LESNIAK: And at that time, what was the inspection report?

MS. TYLUTKI: I'd like to give Dr. Buchanan an opportunity to testify.

DR. R O N A L D B U C H A N A N: The inspection was carried out first in May and then in June of '78. I was there on May 23rd with members of Karl Birns' staff. Inspection at that time indicated non-compliance with the order of the preceding March, violations of Spills Act which have subsequently come under litigation or under direct mitigation through their office and in addition to that violations of OSHA regulations. In particular, welding was going on on site above the drums labeled inflammable materials which was reported to OSHA. And because of our report, OSHA subsequently took action against the company.

ASSEMBLYMAN LESNIAK: So, at that time, it is fair to say that in your May inspection you concluded that the site was not only not getting any better but probably worse. Is that a fair estimate?

DR. BUCHANAN: At that time it was. That is correct. In addition to that the follow-up inspection in June indicates that non-compliance had continued. There was another investigation by the spills people because of a spill on site which was likewise cleaned up. The following report in September indicated non-compliance

and the administrative procedure and then actually the court case was in the process of being assembled. Through late September into October at which time we hired a consultant who is versed in the risk-hazard analysis profession, the case was put together through the Attorney General's Office, through DEP, and including the U. S. Attorney's Office and the United States Environmental Protection Agency. In January, we went into court, and obtained a temporary restraining order. We found non-compliance with that temporary restraining order. And, on March 8th of this year we received a permanent injunction against the company, appointing a receiver to direct the assets to clean up and mitigate the current situation on the site.

ASSEMBLYMAN LESNIAK: At the time of the administrative order when you found the 30,000 drums, did you know what was in the drums?

DR. BUCHANAN: We had estimates from the company itself. In addition to that we had the information from the manifest which specified the types of materials that were received after May of '78.

ASSEMBLYMAN LESNIAK: Did your department ever make any on-site inspections as to materials there?

DR. BUCHANAN: Yes.

ASSEMBLYMAN LESNIAK: At that time, in March?

DR. BUCHANAN: Yes. We knew there were flammable materials there and other types of waste, PCB materials, contaminated dirt, and wastes of that nature which were not only clearly labeled but which the company had indicated to us.

ASSEMBLYMAN LESNIAK: But, you also said that there wasn't any appreciative increase since March to the current time. So, is it not a fair statement to say that the danger was as great at that time as it is today?

MS. TYLUTKI: It probably was. I think Dr. Buchanan's comment on the inspection that was undertaken needs to be elaborated on. The company was in the business of taking on to the site certain wastes which they were supposed to store for a temporary period of time and then put through their incinerator. The inspections were intended to look at the site but there was no method that we had available to us or funds available to us that would permit us to open every drum on site to make sure that they had brought on only the types of materials that they could handle through the incinerator. What has now been discovered as we have gone on through this building with the cleanup team is that they had taken material that they could not send through the incinerator and that this material was never identified for our information, and it was stored in areas that made it very difficult to find.

ASSEMBLYMAN LESNIAK: Is it not a fact that at that time the drums were not properly labeled or stored in March of '78?

MS. TYLUTKI: Most of the drums were probably not because the manifest system did not start until May 1978.

ASSEMBLYMAN LESNIAK: I appreciate your problems of funding and we are going to deal with that situation some time in the future. But, may I suggest that in a situation like that that you go into court immediately. There are assets for the corporation. To think that a corporation that was operating illegally and allowed this situation to develop over such a period of time is going to voluntarily remedy it and clean it up, is the highest of naivete. It is not the real world and it is not going to happen. I have to come back to my original question. I understand this was a difficult situation when you found it, how did it get that way?

MS. TYLUTKI: Let me just address the first part. The legislation under which we operate has only given us the enforcement tool to go after the company

through our inspection and our regulation scheme. So that where we find a problem on any site, all my legislative authorities are geared to mandate the company to improve that situation and correct that situation ---

ASSEMBLYMAN LESNIAK: Isn't it a fact that there are common law authorities that you have concerning nuisances and health violations and safety violations?

MS. TYLUTKI: That may be the case. The second part of it is that there was a very clear representation on the company's part that if we moved to close them, they would declare bankruptcy and we would be in the situation that we face right now - with the government responsible for the cleanup.

ASSEMBLYMAN LESNIAK: I understand. I think many attorneys and probably the AG's Office would tell you that that often is the case with the threat of bankruptcy. What happens is they are given another chance and a year down the road the same thing happens only they are able to make more money in the interim and make the situation worse. I'm still not getting an answer to my original question. How in the world did 30,000 drums get stored there without anyone doing anything about it? The State and the local authorities have broad areas to operate in in these cases to protect the life and health and safety of the public. Is that not a fact?

MS. TYLUTKI: That is a fact.

ASSEMBLYMAN LESNIAK: How many inspectors do you have?

MS. TYLUTKI: I presently have eleven inspectors for solid waste facilities in general which are the landfills and the ones that handle non-hazardous facilities. And, I have four inspectors within the hazardous waste section.

ASSEMBLYMAN LESNIAK: That's a total of eleven for the entire State. Would you say it is an accurate statement that you must rely on inspections of local health authorities?

MS. TYLUTKI: Yes. The statute under which we operate encourages that kind of cooperation.

ASSEMBLYMAN LESNIAK: Can you recite to me a history of the inspection from the first time the site was ever inspected - I imagine that is in 1974 - up to the administrative order?

MS. TYLUTKI: We have and will make available to you a copy of all the inspections from 1975 through the current time conducted by my office which number approximately thirty. There is not presently available here probably additional inspections by the Division of Air Quality who inspected the incinerator. And, I understand they have taken some either legal or administrative actions against the facility over the years. There are also inspections by water and the spills people during that same period of time.

ASSEMBLYMAN LESNIAK: And when your inspectors made their inspections, what was their mandate? What were they to look for? What were they to report back on?

MS. TYLUTKI: I think you hit on one of the problems I tried to state in my opening statement. One of our major problems was that when in 1970 this Legislature gave the State this mandate, the prime thrust of the solid waste program was directed against landfills. In 1974, the regulatory scheme in place was geared primarily towards the inspection of landfills. When I came aboard and took over the Solid Waste Administration in '76, I was aware that there was a shortcoming in the regulatory program. That resulted in the hiring of Roy Weston and Company to develop a hazardous waste program which includes the development of regulations geared to

facilities of this nature. The early inspections by the solid waste people were inspections that were based on regulations more in tune with landfills than a facility such as Chemical Control. They showed a lack of violations the kinds of which you would normally associate with landfills.

ASSEMBLYMAN LESNIAK: This is a recent photograph, I presume. But since you represented that there wasn't a substantial change since March, don't you believe that a landfill inspector, when he sees something like that, ought to know that something is wrong? Don't you think that a private citizen ought to know that something is wrong?

MS. TYLUTKI: I think that the picture speaks for itself. I think you have to realize there is nothing in my current regulations that limits the number of drums that ---

ASSEMBLYMAN LESNIAK: What about safety? It is obvious just looking at it that there are violations of fire codes, safety codes --- What department do those regulations come under? Is it a joint State and local responsibility? Can you address that issue?

DR. PAULSON: With due regard to your earlier comments about general public safety requirements, nuisance laws, and the like, you may be surprised to learn that in this State as in most others there is no clearly vested responsibility for explosion prevention. We are environmental protectors, not explosion preventors. There is one theory that says we shouldn't even be doing what we are doing there already. Needless to say, we haven't bought that theory. There is no clear authority for these matters in the State. There is a huge loophole in this State's legal structure. It is equivalently large in the federal legal structure.

ASSEMBLYMAN LESNIAK: When you say there is a huge loophole in the State's legal structure, do you mean we have left it up to the local authorities?

DR. PAULSON: I'm not sure that most local authorities have anything more precise than fire codes. Those are usually related to individual types of operations or building processes.

ASSEMBLYMAN LESNIAK: Would this site have to have been inspected by the local fire inspector, for instance?

DR. PAULSON: It would have had to be and in fact it has. I have with me a list of the times of inspections by local fire and, I believe, police people as well. I think it is fairly complete.

ASSEMBLYMAN LESNIAK: And no one reported to anybody about this buildup?

DR. PAULSON: I think both our records and city records as they have been described to me show the buildup and narrow it to a period of roughly a very small number of months - a small portion of the year - as to when that occurred. But there was no law being violated by that buildup and no rule.

ASSEMBLYMAN LESNIAK: There was no law being violated by this storage?

DR. PAULSON: Correct.

ASSEMBLYMAN LESNIAK: Were they not in violation of the regulation to store hazardous materials?

DR. PAULSON: No.

ASSEMBLYMAN LESNIAK: If there wasn't any law, why did you issue an administrative order?

DR. PAULSON: The way that they were handling the materials - processing them - was in violation of specific rules.

ASSEMBLYMAN LESNIAK: A few minutes ago, Beatrice testified that the situation was as dangerous then as it is now.

DR. PAULSON: I agree with that judgment. We did not know, we were not legally mandated by law or rules to inspect every drum. We still aren't for that matter. The company was, in fact, supposed to report different amounts of information at different periods of time. They did not report everything. During the period when they weren't supposed to report - when they weren't required to report at all - they weren't violating any rule. In hindsight, today, we can presume that probably at some point, under the manifest system, for example, they were not reporting accurately. But, we do not have the capability to check each drum, vial, etc. that comes in, nor does anybody else for that matter. I'm sure the city doesn't have that ability either.

ASSEMBLYMAN LESNIAK: I'm certainly not asking you to check each drum and vial that comes in. But, with a situation as obvious as this, there ought to have been made at least a random - at least a random - check. There ought to have been made an attempt to at least secure the area as far as around the river and on the streets. The pileup is along the streets and its along the riverfront. It is a horrendus situation just at sight. Any private citizen looking at this picture would say, "What in the world is in there?"

DR. PAULSON: That is correct. Those are, in large part, what led us to take the legal steps in court, something that you don't like to do very often - to place the facility in receivership and as the days and weeks have rolled by to take control of it and the responsibility for the safety of the facility. There is no neat and orderly procedure for this class of facility that allows us to do that. There is no neat and orderly mechanism that gives us the resources in money to meet this problem. We are doing it anyway because we think it has to be done.

ASSEMBLYMAN LESNIAK: Dr. Paulson, we are running into a time problem. I'm sure we are going to have another hearing but, I know a nuisance when I see one. And, I know that in the area of common law remedies there are certainly nuisances a lot less dangerous and a lot less potential, safety risks than this. I also know that the law calls for action against these types of risk and safety hazards whether there are regulations or laws notwithstanding. Those actions can be taken either by private citizens, by local authorities, or by the State. In this instance, certainly our eyes should have been much more widely open than they were. And, I can't understand why action wasn't taken immediately.

DR. PAULSON: Let me remind you, I mentioned earlier the regulations that we proposed that were not acceptable to anyone that would have given us the early handle on that facility and would have prevented the close stacking. In addition to that, under nuisance law, most of the things you are mentioning - dilapidated buildings and the like - there is a straightforward set of case law and there is a straightforward technical engineering mechanism for solving the problem. Usually those mechanisms are also cheap. Here we have the absence of case law and we have the absence of the straightforward cheap mechanism to deal with the problem. Let's take for a moment and give some credibility to that rough estimate, that maximum of say ten million dollars, to clean up this facility safely and suitably - and you have seen the kind of gear and equipment that is required. That is almost one third of DEP's general State appropriation. There is no designated pot of money in this State or any other or at the federal level that is available in an orderly and timely manner to deal with this facility and the other ones like it that are cropping up around the country.

ASSEMBLYMAN LESNIAK: My point is that in March, this same problem existed. Some time before that it ought to have been determined by either the local officials

or the State officials that this problem was growing and growing and growing. And, long before that, action should have been taken so that it wouldn't cost ten million dollars to clean up. We can't just close our eyes and allow these things to occur and then say we don't have the funds and we can't do anything about it. I'm sorry we can't continue this. I have been told by the Chairman that we have to move on but I hope that we can further discuss something in some area of regulations, in the area of staffing, in the area of legislation, and funding, so that when we get a situation where there are 30,000 drums that we don't know what is there, and it is going to cost 10 million dollars - and that's the first time I ever heard that figure, my God, I don't know where we are going to get that money from ---

MR. ARBESMAN: Assemblyman, if I could just offer a brief comment. If you are asking us if we are proud of our enforcement record on this case, we are not. If you are asking us if we think we have done a good job in the enforcement of this case, we do not think we have done a good job. We are coming here indicating to you that we have not had the resources; we do not have regulations; there is no federal network of policy or procedure to guide us in this regard. We are really operating as we go along on these facilities one by one. We learn from each one. We have a lot of unfortunate mistakes on Chemical Control. Fortunately, we are trying to use the experience gained there and elsewhere not to make the same mistakes in other parts of the State. These are problems though that have cropped up from years of neglect. You heard that this facility started operation in the late 1960's. The mushroom did not appear overnight. There was a rapid escalation which we are admitting. We have a facility on our hands now that we did take enforcement action on finally to bring to a head or try to deal with that very serious situation with all effected parties in the best interests of those involved. It is not a record that we want to defend. It is a record that we want to use as an example of what needs to be done.

ASSEMBLYMAN LESNIAK: I appreciate that statement. It is probably the best statement I heard today. It is a foundation on which we can work to build for the future.

MR. ARBESMAN: Well, I hope so.

ASSEMBLYMAN LESNIAK: Mr. Chairman, I just have one other question. As far as the cleanup, because we have to deal with that, how much money are we going to need? I know I am prepared to introduce legislation involving a supplemental appropriation and I have spoken to the Commissioner and the Governor about it. But, I have to go before this legislative body and I know there are people up in other areas of the State that are going to want the same thing. I think we have a severe case here that we can make to provide some funding. How much --- you said ten million dollars. I never heard that. Is that a fair estimate?

DR. PAULSON: Since we discover more worrisome materials with each passing day, any estimate has to be a highly subjective one. We have asked private companies to provide us estimates for pieces of the work or the whole job. Their estimates vary widely. The ten million dollar figure is our best judgment based on our own knowledge and experience with the drum materials coupled with an area in which we do not have a lot of previous experience - the explosive materials. It is the largest estimate we have come up with. It has to be considered highly tentative. We appreciate your interest and your willingness to move ahead to provide us the additional resources. It is quite clear that the current restrictions under law on the State Spill Fund means that that law and that fund cannot be used to cover the

whole job. I think everybody recognizes that and there may be amendments perhaps appropriate for the Spill Law, another fund, etc. We will keep you posted. The Commissioner has agreed to march side by side with you to the appropriate people to make that request. We intend to do that. The precision of that estimate, though, will have to be very rough for some period of time. I emphasize that we do have the resources available to defuse the situation. That, in itself, will take time. It is not something that can be done precipitously as I am sure you can appreciate. I think we have the time to get a more precise estimate and explore other means for the balance of the problem - the larger but less worrisome part of the problem - after we have taken care of the smaller but more worrisome piece that we are working on these very hours.

ASSEMBLYMAN STEWART: On behalf of the Committee, Dr. Paulson, I'd like to thank all of you for coming. It is refreshing to know that so many of your key people took the time to come here today for what was not an easy subject for you to come out on. There are other things you would probably rather be doing today than discussing the Elizabeth situation. I think it is a credit to the department that you all came here and were very factual with us. As the Assemblyman said and Mr. Arbesman said, I hope we are going to learn from this episode. I would hope that the department will keep us advised. You mentioned that there are loopholes big enough to drive a truck through. If you keep us advised as to how you think we can start closing some of those loopholes - the Super Fund is one suggestion that is growing already, and any other you might have - we would appreciate it. The real purpose of these meetings, and there will probably be more, is to make sure we start closing that big loophole and that this doesn't happen again in New Jersey. If it does, we want to see that we have the resources to handle it next time.

DR. PAULSON: Mr. Chairman, we appreciate your interest and your continual reopening of the door to our ideas. You can be sure that we will walk in. I should point out though that we believe we have no choice but to deal with the facility including discussing it. In fact, that is Mr. Birns' and my next stop - up to the facility.

ASSEMBLYMAN STEWART: We have experience with some officials - who shall remain nameless - who don't feel it is their responsibility to come and talk to us. We appreciate your being here. Jim Marshall, Director of the Office of External Programs of the EPA followed by George Abyad from Wharton Township in Morris County.

J I M M A R S H A L L: I'm Jim Marshall. I'm Director of External Programs for the Regional Office of the EPA. I'm also Chief of Staff to the Regional Administrator Chris Beck and this statement is in his name. I might say that Mr. Stier and Dr. Paulson have covered a good many points that I intended to make in this statement. So, in the interest of time, I will try to edit as I go along. I do want to stress some points they made and also leave you with an overview of what the federal resources or lack of resources and responsibilities and lack of responsibilities in this area are.

We estimate that 10 to 15 percent of the annual production of about 34.5 million metric tons of industrial wastes in the U. S. is hazardous. This waste has been produced for decades, and is now projected to be increasing at 3 percent per year.

A sizable portion of that waste is generated right here in the highly industrialized Northeast, and tons more of it are already buried in the ground.

In New Jersey, we estimate 900,000 metric tons of hazardous waste may be generated yearly by as many as 15,000 generators. With regard to abandoned facilities,

there may be as many as 100 sites which have received hazardous waste without exercising proper environmental constraints. This means, of course, that those of us who are charged with the responsibility for environmental programs with regard to hazardous wastes are up against a problem which is really two-fold. First is the safe management of wastes now being produced. Second is the problems of the past which have come back to haunt us, or could yet come back to haunt us, like the circumstances at Elizabeth.

From the federal perspective, these problems do not stop at county or state borders. They impact on the entire nation.

Our latest estimate - this was in the report which I believe Dr. Paulson appended - is that there may be as many as 1,200 to 2,000 abandoned, or potentially abandoned waste disposal sites around the country that may require clean-up action similar to what is going on at Love Canal with an estimated cost - and this is the outside high - of a staggering \$50 billion. These problems have grown so pervasive that the federal government is prepared to use all that we now have in the way of legal powers to deal with them.

But - I think this was clear from the statements of Mr. Stier and Dr. Paulson - the main responsibility for hazardous waste problems will remain at the doorsteps of individual state governments. There is no other choice in a national problem of this magnitude but to bring all levels of government into play, but no unit of government is better placed strategically for taking the lead than is the state government.

However, EPA can offer some aid - a good deal of aid actually - through a multi-faceted program of detection, measurement, cleanup and enforcement. This program involves close, continuing cooperation and coordination among EPA, the U. S. Department of Justice, New Jersey's Department of Environmental Protection, and the State Attorney General.

I will just run through some highlights of some of the programs that we now have under way with New Jersey. For example, we recently awarded New Jersey DEP grants totalling \$453,000 for two projects related to toxics. One is for a Toxics Investigation and Integration Unit that will identify and investigate toxic substance problems and integrate problem solving activities among appropriate State agencies. The other is for a broad program to analyze volatile organic chemicals in the air. These monies were made available under the Toxic Substance Control Act.

In addition, we are working with a number of public interest groups in New Jersey on a pilot program in public participation related to toxics. This program has grants totalling close to \$200,000 throughout New Jersey and also in part of New York State. What we are getting out of this is some idea of how best to keep the public informed, involved, and taking part in decision making on toxic problems.

As far as cleanup of sites is concerned, under the provisions of the Resource Conservation and Recovery Act we have provided DEP with \$446,000 in grant funds to develop and implement some of their hazardous waste management programs. I think the DEP people covered that pretty well. We have also supplied DEP with technical assistance for evaluating their state permit applications and for developing state rules and regulations on hazardous waste management.

As far as the Elizabeth Chemical Control case is concerned, we have supported New Jersey from the outset in this action and we inspected the site ourselves back in November or December of 1978. We concluded there was a very imminent hazardous situation here. We worked with the U. S. Attorney and the State

Attorney General's Office, and the DEP on the preparation of the legal action there. We considered for a while, a federal action under the Imminent Hazard provisions of the Resource Conservation and Recovery Act. But the various enforcement agencies concluded that the most direct route was through the temporary restraining order that the State signed.

Right now we are the lead agency in convening the federal Regional Response Team, the purpose of which is to determine what federal agencies and how best these federal agencies can help the State in addressing the cleanup problem in Elizabeth. This assistance ranges from the use of the army explosive experts to some advice from our Regional Radiation Team.

As far as enforcement is concerned, the EPA announced last week a major new national policy to investigate hazardous waste dumpsites that are real or potential threats to human health.

We expect that nationwide as many as 300 investigations per year and 50 prosecutions of the worst cases will flow from this new policy. There will be three key elements in this enforcement thrust, first, the number of EPA personnel involved in hazardous waste investigation will be significantly beefed up, involving as many as 50 additional staff members all over the country, including Region II, being reassigned to work in the program. Secondly, we are seeking a supplemental appropriation of \$131 million in our Fiscal 1980 budget and approximately 190 new staff positions to investigate dumpsites and do legal case work. And finally, and this is most important from the point of view of New Jersey, we at the federal level are seeking legislation which we expect to submit to Congress in May to establish a national super fund created by fees on industry to provide money for cleaning up sites for which remedy cannot be achieved by injunctive or enforcement action. I would urge the Committee during its deliberations to make its views known on that national legislation as well. I think it is very important for State viewpoints to be fed into that process. Right now we are in the midst of discussing this with OMB. There are some Congressional initiatives as well in developing different versions of this legislation. Some of the questions have to be ironed out before the final bill is developed. They are the degree to which federal funds will be involved, the degree to which we can impose liabilities on industry, the degree to which state governments will be asked to contribute, and so on. Those are the kinds of questions that are still outstanding.

It has already been mentioned here that the Department of Justice, at EPA's request, initiated one of these type of enforcement actions that I was talking about here in New Jersey against the Kin Buc landfill. This, I might note, was the first action taken in the whole country under the Imminent Hazard section of the Resource Conservation and Recovery Act. While this site was closed by the DEP a couple years ago, there is continuing concern over the leaching of materials from the site into surrounding surface and ground waters. The civil action that Justice has undertaken seeks injunctive relief, penalties and damages which are aimed at ensuring the landfill will be thoroughly surveyed and adequate corrective measures taken once that survey is completed.

Something that Mr. Stier referred to as well is that we, at the Regional Office, of EPA, are exploring with the U. S. Attorney for New Jersey, Mr. DelTufo, with the State Attorney General and with DEP and also with local police and fire agencies, we are exploring the funding of a joint action committee. The aim of this project would be to take care of some of the problems that Mr. Stier mentioned - to beef up local and State law enforcement capabilities for a continual detection

and investigation of illicit dumping, how best to assess civil and criminal penalties, and how to develop ongoing control programs. We are very deep into developing this project right now and we expect to have something to announce next week or so. The outstanding question on this one is what funds will be used to take care of the federal share of this program.

Another item relating to hazardous waste that involves EPA very directly is the application from Rollins Environmental Services to dispose of polychlorinated biphenyls or PCB's in conformance with the PCB rule on marking and disposal. This is the one hazardous substance in which EPA has a direct statutory role, the Toxic Substance Control Act. The Act directs us to handle all permitting and inspection and enforcement activities related to this one particular chemical. We have been working with the DEP and with the Delaware River Basin Commission on this application. We are proposing that Rollins perform a trial burn in the near future to demonstrate the efficacy of their incineration process. Based on the results of this and the findings of the local and State agencies, we will make a final determination on the permit application. I might just emphasize something that both the previous groups have mentioned. There is a definite need for sound hazardous waste incinerators because, when they are properly operated, removal of large quantities of hazardous organic waste is assured. As Love Canal has demonstrated, the placement of non-biodegradable organic wastes within landfills without long term maintenance can have disastrous effects.

New Jersey has opted to be part of the chemical revolution. That industry has contributed in a major way to the State's prosperity. But going along with this prosperity must be the realization that there is no such thing as zero risk. The industry cannot operate without generating some quantity of waste products, a significant portion of which is toxic or hazardous. It behooves the State, therefore, to ensure that facilities exist to dispose of these wastes in a manner that poses the least risk to human health or the environment. We need facilities like Rollins. We need to develop industrial waste exchanges that will encourage the re-use and recycling of wastes. We need landfills and incinerators that are constructed and operated in accordance with the very latest technology. We need a strong capability in State government to regulate and police these operations.

Otherwise, we end up with the Chemical Controls, the Kin Bucs, the Love Canals, and the midnight dumpers. I might just cite here as an example that there is a similar committee in the New York State Legislature, joint Senate and Assembly Committee on Hazardous Wastes, that has been having a similar set of hearings. Last week, they came up with a proposal which we thought was rather imaginative and innovative. They have a proposal for a State bond issue of \$130 million which would be used to construct four modern hazardous waste disposal kilns around the state. I cite that only as an example of the kind of initiative we think is admirable at the state level.

EPA provides grant funds to New Jersey under a number of different programs, a number of different acts, a number of different sections of acts. We think, and we have been discussing with DEP, that some of these funds can be brought more to bear on hazardous waste issues more than we have in the past. We think they could be directed toward planning and organizing hazardous waste identification and protection activities. We are now working with DEP on a comprehensive agreement, which we call the State-EPA Agreement, on water quality management. This is the kind of question that we are addressing in this agreement - how to better manage the funds of authorities that the federal government provides to the State.

Just in closing, I would like to note that the problems faced by New Jersey with regard to hazardous wastes are, unfortunately not unique. They occur across the nation.

As far as the EPA is concerned, when you compare New Jersey with other states, New Jersey's program for dealing with these problems is aggressive, energetic, comprehensive, and innovative. I think one point that didn't emerge in the discussion of the shortcomings of the manifest system is that New Jersey is practically the only State that has one. We regard this as a very forward action on the part of New Jersey to have gone ahead and put that into effect without waiting for our admittedly late federal regulations to come along. We now, both the federal and State governments, must continue to address these problems together. Unfortunately, we are grappling as Chemical Control vividly illustrates with mistakes that were created through ignorance of the past. It is our obligation now to eliminate this ignorance in the present so that our children, and their children's children, are not faced with the prospect of other Love Canals and other Chemical Controls.

ASSEMBLYMAN BARRY: Could you very briefly tell us the status of the federal legislation designed to create a super fund for the purpose of cleaning up some of these dumpsites? If that fund were intact would that revenue be used, for instance, in Elizabeth?

MR. MARSHALL: This legislation at the national level is still very much in the formative stage. There are various proposals that are going around right now. Senator Moynihan and Congressman LaFalce last week introduced a bill that is specifically directed to abandoned sites. Their bill includes liability for personal injury and quite a bit of liability. We are looking at bills that would be an administration bill that would combine the hazardous waste issue with some of the existing thrust we have on oil spills and other existing spill legislation. Now the general thrust of this legislation, as far as I know, any of the versions being considered would apply to the Elizabeth situation. The purpose of these bills is to plug what is - as Dr. Paulson noted - a major loophole in existing federal legislation. The Resource Conservation and Recovery Act, which seemed the best thing since cream cheese when it came along in 1976, we now realize had this major drawback to it that it took no account of the problems of abandoned sites. That is the major purpose of these proposals that are now going forth. I can't go into too much detail because the specifics of the administration bill are still very much at the discussion stage with OMB. The EPA has its ideas, the OMB has its ideas and I think it would be a little premature for me to go into any details. But, yes, I think any form of bill that does come out would address situations like this.

ASSEMBLYMAN STEWART: Is it fair to say that the regulations that are on their way will help solve the problem of the manifest in other states - that we will have a uniform system?

MR. MARSHALL: Yes. That is one of the things that is included in these new regulations - a uniform manifest system. New York State is drawing up one similar to New Jersey but the form of their legislation was that it would not be triggered until the federal regulations went into effect.

ASSEMBLYMAN STEWART: You may not be the one to ask this question of, but possibly you are. Do you know how many facilities we have in New Jersey that are capable of handling this hazardous waste?

MR. MARSHALL: At this point, I guess Rollins is about the only one that is licensed and operating. You also have this Earthline Company whose resources, I believe, are somewhat smaller.

ASSEMBLYMAN STEWART: The Rollins facility is the only facility in the State other than Chemical Control that could have handled this?

MR. MARSHALL: Well, Kin Buc, of course used to handle it until it was closed.

ASSEMBLYMAN STEWART: So, Rollins is the only alternative left in New Jersey?

MR. MARSHALL: It is the only currently operating permitted site in New Jersey. There are other sites in the region which had been used by some New Jersey industries since the Rollins explosion and the Kin Buc closure. There are licensed sites in Connecticut; there are licensed sites in Erie and Niagara counties in New York.

ASSEMBLYMAN STEWART: It just so happens I represent the legislative district that the Rollins facility is located in. As you can imagine, the people in that area do not feel honored to be the only place in New Jersey where this material can be taken to. In fact, before you leave today, I'd like to talk to you about that. The next question from Assemblyman Lesniak is how do you take his problem and make it my problem?

ASSEMBLYMAN LESNIAK: You can have it any day of the week. I just have one question. Aren't we spending too much time and emphasis on funding and what we are going to do after we discover the problem, but not dealing with how that problem gets there to begin with? For instance, I was quite shocked to hear today that the Elizabeth site is going to involve a \$10 million bill. If this had been discovered, and if the State and local officials had been alert two and three years ago certainly we would not be talking about \$10 million. Maybe we ought to find some money to provide the proper staffing and the training and inspection system at that point so it doesn't develop into this stage.

MR. MARSHALL: I think that is a very good comment. I think the package of regulations that are coming down under the Resource Conservation and Recovery Act will address your concerns as far as existing and new operations are concerned. They won't help us one bit as far as these things we swept under the rug for so long. But, what we will get out of these regulations and what New Jersey is already in the process of implementing is a kind of cradle-to-grave management system which will, we hope, provide an adequate tracking of where wastes are generated, how they are transported, where they go. It will provide the best available technology in terms of operating these sites, in terms of controlling what becomes of the materials that are disposed of by these sites, in terms of establishing the appropriate financial capabilities and liabilities on the operators of these sites. This, unfortunately, is something that is going to deal with our future problems and not our past ones. I think about all we can do right now as far as things that are popping out from under the rug, is to look for some appropriate legislation like the super fund legislation and look to beefing up our enforcement and inspection capabilities. I think that is an interesting point that rose out of Mr. Stier's testimony that, historically, the environmental agencies at any level have not had any investigative or a gumshoe capability, if you like. We do not have the capability, the skills or even the knowledge to do these 24 hour surveillances, to do the tracing of ownership of companies, to do the tracking down of false corporations, and so on. I think this has been a great lack in the kind of agency that I represent and that the DEP is as well. We have not had this police mentality which I think we do need if we are going to deal with some of these problems.

ASSEMBLYMAN LESNIAK: Don't you think that any part of an early warning system must necessarily include a reliance on the local board of health and the local fire and safety codes?

MR. MARSHALL: I think there is a very definite first line of defense there that we would rely upon.

ASSEMBLYMAN STEWART: Thank you very much for taking time to talk to us today. Our final witness will be George Abyad from Wharton Township in Morris County. Thank you very much for your patience.

G E O R G E A B Y A D: Thank you Mr. Chairman. I thank the Committee for asking me here today. I would like to tell the Committee a story of what is happening in the borough of Wharton and how a municipality comes across a problem with chemical waste and attempts to solve that problem. Here is what happens. It is a continuing story. We are dealing with a piece of property that is owned by a commercial company in Wharton. It is approximately two acres and is bounded by a plastic vinyl manufacturing plant. Their byproducts are four or five different chemical toxic wastes including xylene. The western and northern border of this approximately two acre piece of property is bordered by the Rockaway River. The other southern border is bordered by a fire trench which separates this property from that owned by Air Products who manufactures gas in Wharton. On this particular piece of property prior to 1979, the company had disposed of chemical wastes by storing them in drums. They buried some of them and carted others away. In 1976, the company launched a voluntary cleanup program. According to Jack Vernam of the State Department of Environmental Protection, Hazardous Waste Bureau, the company was requested to clean up the dump following a minor fish kill in the Rockaway River in 1976. Vernam said that Carpenter dug several trenches and had some saturated earth carried away. Vernam said that the DEP had put a stop to Carpenter's storage in drums of chemicals. Wharton Sanitarium's Richard Knopf, myself, and the Borough Administrator toured the property May 3rd. We found at least two hundred, fifty-five gallon drums containing different chemicals. Now back to this piece of property again. Wharton was alerted that this property was causing problems in the Rockaway and a possible problem to our well which was a quarter of a mile downstream on the Rockaway River, by a report done by the Rockaway Valley Sewage Authority when they were putting through a new trunk line in this area. Rockaway Valley asked an independent engineering firm to do some borings on their right of way through the Carpenter property. They are using a 300 foot long path with a 17 foot wide stretch right through this one to two acre land in question. The test was done late in January. By the time the results were in and the report was submitted to RVR, on February 2nd, we see the findings. I am not an expert on this but I have been told by the sanitarium and by the Madison Health District that they are extremely high. They include everything from xylene to phenols to heavy metals of tin and arsenic and zinc - all from this property. This report was sent to RVR from the engineering firm. RVR sent this report to the DEP and it is stamped received DEP, February 8, 1979. We received nothing from DEP on that and Rockaway Valley did not either. On April 4th, it was reported to our sanitarium that these findings had been made. It took that long to filter through RVR, to Madison, to the sanitarium, to the borough that on February 8th DEP had been informed. The person informed was Ronald Buchanan, the Bureau of Hazardous and Chemical Wastes, and nothing has been done since that time. On April 9th, the borough sent a letter to DEP requesting them to come and test our well #3 which is one quarter of a mile downstream from this problem. On April 9th, the municipality also took it upon itself to have a test done on our well. On April 10th, DEP advised L. E. Carpenter - this is a copy of a letter from DEP, Division of Water Resources - -- "Dear Sirs , This letter serves to inform you that the State of New Jersey Department of Environmental Protection intends to certify you pursuant to section 401 of the Federal Clean Water Act.

1977 that discharges of L. E. Carpenter & Company which are subject to federal application number --- Certification shall apply as requested by EPA Region II --- This is to serve as a certification for your permit because L. E. Carpenter does direct dumping into the Rockaway besides storage of chemicals. As long as you comply with (a) floating solid suspended soluble solids, oil, grease, color, non-noticeable in the water, or deposited along the shore, or the aquatic substrata in quantities detrimental to ---" This is a condition that already existed on February 8th. It was a condition discovered early in January and a condition that the DEP had been informed about on February 8th.

That letter came from the Division of Water Resources on April 10th certifying that in their discharges - and I don't know how long it is good for, I understand there are varied lengths of time that they have to apply for permits --- Apparently there was no inspection done of the property. When you license someone I should think - and they have a permit and are licensed to do something - certainly you ought to make sure that they are doing what they are licensed to do. If I want to get an inspection permit for my motor vehicle, I have to have my motor vehicle looked at. They are here given blank permission to continue dumping in the Rockaway River and obviously nobody came to look at that site. We continued to ask the DEP for help in this matter. On April 25th, we found from our private labs that there was xylene and thalates bordering the river. On May 1st, the story broke in the newspapers. Today is the 9th. We in the borough have tried our best to get somebody down there to help us. But, once the story broke in the newspapers - I just got a copy of today's newspaper as I walked in here - we have been front page and second page in the newspaper, "Chemical seeping into river", and "Poison feared in water system." The people of the borough are scared stiff. Now, I think, fears are probably unfounded in our well, though we don't know. DEP was up there the day before yesterday with two men from Water Resources to take three samples, one from our well and two from the Rockaway River. But, this has been a long, long struggle with a lot of letters to DEP. I have them documented as to whom they went to, what answers we received back. We are very unhappy. We still haven't gotten any results. We did have two men come up and take a look at the problem on Monday. But, on a municipal level, when something like this is discovered - and we would not have been able to discover it ourselves, we had no reason to go on that private property - but though it was brought to our attention by a report that was sent to us at the same time it was sent to DEP, a flag went up for us, but not for DEP. Even a formal request to DEP fell on deaf ears except for one letter - one documented letter we received from DEP on April 20th. It stated that as this toxic waste contamination appears related to the destruction of the sewer system, "I am asking the Acting Director of the Division of Water Resources to check into this matter. He will coordinate his activities with our Solid Waste Administration to assure any ongoing enforcement investigations are reported. You should be hearing from Mr. Hoffman shortly." We have yet to hear from Mr. Hoffman. "A copy of this letter went to Director Tylutki of Solid Waste." This letter is dated April 20th. It came from DEP from a Mr. Paul Arbesman. On May 3rd, asked by a reporter from the Daily Record for a comment on this situation, Director Tylutki stated, "I'm not informed of it." That was 14 or 15 days later. We had this already on our file. Inter-office communication can't take that long.

So, I brought this to your attention, gentlemen, in that I feel that there is not proper cooperation between the municipality and DEP. When a municipality goes to DEP for help; they need help. They are facing the problem that they do not have the resources to do the chemical and bacteriological tests on the water that

are necessary. We need help now. When a borough writes and says please come and test our well, they are fearing that their water has been contaminated. And, no answer, no answer, no answer. I think that after seven days of headlines in the papers, the DEP came. That was not as a result of a letter saying we are coming on a certain day; it was not even as a result of a phone call stating we are coming. They just showed up and came on Monday. Good. We are getting something done now. I am not here to ask for more. I'm sure DEP will help us now the best they can. But, why didn't they help us three months ago? We had a situation that could have more economically been handled, as you were saying earlier, three months ago. We face it now. That is all I have to say.

ASSEMBLYMAN BARRY: I just would hope that the Committee --- I can assure you we will try to determine exactly what problems were created in this unusual situation where you discovered a problem in January and it isn't until May 7th that we actually have an on-site inspection by DEP. I think that is something that I certainly will ---

MR. ABYAD: In all fairness, DEP was notified on February 2nd.

ASSEMBLYMAN BARRY: Right. I do want to thank you George for coming down here and giving us the details.

ASSEMBLYMAN STEWART: In your closing statement you said you don't need to talk to the people now because now you are talking to them. We certainly have enough of them in the building right now where we could sit you down somewhere and talk. Obviously, you are satisfied now.

MR. ABYAD: I want to talk to them. I really do. But, you are concerned with this and how to diagnose these things and how to get DEP to be receptive to complaints.

ASSEMBLYMAN STEWART: Of course, my first suggestion to anyone whom I come in contact with having a problem that gets tied up with bureaucratic red tape is get ahold of your legislator. If there is a next time, do that and we, as legislators, will get in touch with the proper officials as soon as possible to make sure that your problem isn't lost somewhere in the maze of papers that go around. We appreciate your pointing it out to us. We thank you for taking some time to be here today.

MR. ABYAD: Thank you.

ASSEMBLYMAN STEWART: Since there are no more questions, we will close the hearing.

Paulson

REMARKS BY THE HONORABLE DOUGLAS M. COSTLE
ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY
PREPARED FOR DELIVERY BEFORE THE
WOMEN'S NATIONAL DEMOCRATIC CLUB
WASHINGTON, D.C. Thursday, March 29, 1979

DEFENSE BY DISASTER:

Proving the Value of Environmental Protection

No title for my remarks has been announced today -- through no fault of my own. When your program chairman called, I had one ready -- and I thought it was quite a peppy title indeed. It read: "Everything You Always Wanted To Know But Were Afraid To Ask about Cost-Benefit Analysis in Environmental Regulation."

I read this over the phone, expecting a delighted response . . . but all I got was silence, and then a low, muted female moan. After several moments, your program chairman suggested that this title might not pack the club; in fact, she suggested, people might stay away in droves, and we would be left only with a small, indiscriminating band.

So I agreed with her suggestion that we leave my remarks untitled. Now that you are here, however, and my agents are blocking all exits, I will tell you everything you always wanted to know but were afraid to ask about cost-benefit analysis in environmental regulation. And afterwards, there will be a quiz.

Actually, the topic -- lacking though it is in sex-appeal -- is an extremely important one. It helps us figure out how far we

have come in cleaning up the national and global house where we live. Nearly a decade has passed since the first Earth Day. That day marked the beginning of a major national effort to combat pollution. Today, we can list some of the gains that effort has brought us:

- * More than 85 percent of the plants and factories that are major potential sources of air and water pollution have cleaned up their act, and are now complying with anti-pollution laws.
- * Rivers from the St. Johns in Florida to the Willamette in Oregon are being reclaimed from the blight of pollution. The stretch of the Potomac that borders this city has improved to the point where it is now home to as many as 60 species of fish.
- * Vast areas of scenic New England that once were afflicted by a noxious combination of sulfur dioxides, particulates, and other forms of pollution now meet most federal health standards for air quality.
- * Even the tough fight to curb the environmental damage done by the automobile has shown results. EPA's latest figures show that carbon monoxide levels have been cut by 20 percent. Smog levels held steady between 1972 and 1977 -- but that is in the face of 30 percent jump in vehicle miles travelled during that five-year period.

While not many would argue with the proposition that the national clean-up effort is succeeding, many officials in industry and government contend that the cost is too high. They argue that, in these inflationary times, we must make sure that every existing or proposed regulation either pays its own way, or addresses a critical health problem that must be met regardless of cost.

This is a thoroughly justifiable point of view, and in advancing it, these officials are doing their jobs. Indeed, the drive to eliminate every unnecessary regulation and to make sure that the others achieve their objectives as cost-effectively as possible is part of my job. As first Chairman of the Regulatory Council, established by President Carter last October, I head an effort by 35 federal Departments and agencies to control the costs of regulation.

Even before I undertook that assignment, however, I became uncomfortably aware that the anti-regulation players in this cost-benefit game were using a loaded deck: both economic history and economic method stacked the cards in their favor. In consequence, as H. L. Mencken once phrased it, they played "with the serene confidence of the good Christian who has an ace up his sleeve."

Let me explain. It is easy to count most of the costs to industry of environmental control. Such anti-pollution devices as filters, stack-scrubbers, and waste-holding ponds are tangible things which must be built or bought. The expense of each can be precisely ascertained. So can the salaries of personnel needed to operate and maintain pollution-abatement equipment. In addition to these straightforward expenses, there are other costs that can be estimated: for example, environmental-regulation may slow the rate of introduction of new chemicals, or prevent others from ever being introduced. While it is hard to measure the benefits we forego from such regulation, this, too, can represent a cost.

But the benefits are much more difficult to calculate. We did not start a concerted national program to clean up our air until 1970. We did not start a concerted national effort to measure the pollutants in our air until 1972 -- not out of laziness, but out of unfamiliarity with the job. Accurate air-measurement is a technical process requiring devices that often had to be designed from scratch, mass-produced, and then distributed around the country. Hence, until very recently, we did not have reliable data. . . and even the information we have now goes only a few years back.

Coupled with this lack of air-quality information is our lack of scientific knowledge about the health-effects of specific air-pollutants. Such pollutants do not exist separately in the air; they mix in all sorts of chemical combinations, reinforcing each other's effects -- and thus complicating scientific analysis.

We know that sudden concentrations of air-pollutants can cause death, because history offers us several examples: Donora, Pennsylvania, in 1948, where 20 people died; London, in 1952, where 4,000 died; and New York, in 1953, where 200 died during a single air-pollution episode.

Thus it is reasonable to assume that levels of air-pollution below these extreme concentrations do have health effects. . . and it is widely agreed among medical researchers

that sudden increases in pollution-levels weaken the body's defenses against disease, or aggravate sicknesses they already have.

A third difficulty in benefit measurement is the most difficult of all: translating certain kinds of physical benefits, such as reduced sickness or the prevention of premature death, into dollar terms. In other words, what is the economic value of a longer and healthier life?

Because of these analytical problems, health effects and their economic valuation remain speculative. We cannot pin them down. . . and in the meantime, business and government officials can point to the dollar-costs of controls that federal regulation requires. The upshot is that, while our critics consistently appear no-nonsense fellows with their feet on the ground, environmental regulators come across as a bunch of bureaucratic flower-children intent on recreating the Garden of Eden.

Along with my predecessors at EPA -- all high-minded, idealistic, courageous public servants like me -- I am willing to take considerable punishment in a good cause. But there does come a day when you tire of taking abuse because the ease of their cost-calculations, and the difficulty of our benefit-caluations, has dealt them all the impressive numbers.

Accordingly, late in 1976, EPA commissioned a team of economists to investigate the health-benefits of air-pollution control.

The interim results of their study -- two years into a three-year project -- are being released today. Together with other data, the findings indicate that dollar-benefits flowing from reduced mortality and sickness -- and hence more time on the job -- are substantially greater than the costs of controlling air pollution from power plants factories, and other stationary sources. Further, the study indicates there are solid economic benefits from improved visibility.

I will cite the dollar-figures later. First, I'd like to tell you how the researchers arrived at them. Their methods display considerable ingenuity, and illustrate fresh approaches from the still-young field of environmental economics. One approach has to do with health-benefits. The second has to do with the relationship between air pollution and property-values.

For the first section of the study, on health benefits, the researchers explored both death-rates and sickness-rates associated with air-pollution. They analyzed death-rates from major diseases in 60 U.S. cities. They also analyzed statistics on more than 30 factors that affect mortality rates, including

occupation, medical care, cigarette-smoking, race, age, diet, and air pollution.

Through this process, the researchers were able -- by well-known techniques of statistical analysis -- to isolate the health-effect of air pollution alone on the entire U.S. urban population. This effect was expressed as a dose-response relationship: simply put, the increased number of deaths resulting from each increase in air pollution.

The findings indicate that the effect of air pollution death-rates has been overestimated in the past. On the other hand, its effect on sickness-rates has been underestimated.

This finding posed a new set of questions: how often do people get sick because of polluted air? How often does such sickness prevent them from working -- either at an income-producing occupation, in a factory, or at a value-producing occupation, in the home? And what is the total of wages and values lost through such sickness?

To investigate such questions, the researchers needed highly specific information on a smaller but fairly representative sample of Americans. They found it at the Survey Research Center at the University of Michigan; the Center was able to provide detailed data -- almost diaries -- on the daily lives, work, health, and budgets for 5,000 heads of households, dating back to 1968.

These data showed a strong correlation between days lost from chronic illness and air pollution levels. A detailed statistical analysis allowed the researchers to estimate how much of the sickness was caused by air pollution, and how much by other factors such as cigarette-smoking and diet. And the income figures, finally, permitted them to calculate time and wages lost because of air pollution. They concluded that if the nation could reduce air pollution levels by 60 percent, we would realize benefits of \$36 billion a year.

We have not reduced pollution-levels that far yet; that is the target we are shooting at for the 1980's. But we have made progress toward that goal. Between 1970 and 1977, air-pollution controls reduced air particulates by 12 percent. Interpolating the research results indicates that a 12 percent reduction -- a reduction not only in pollution but in sickness -- is saving us \$8 billion a year in workers' wages and productivity.

Even this figure, substantial as it is, does not take into account a number of other benefits we have already experienced. It does not, for instance, take account of the fact that air pollution levels would have risen higher since 1970 without pollution control laws. Thus total benefits include not only those from cleaning up the air, but those from preventing further deterioration. . . and it is likely that the prevention

is worth at least as much as the actual improvement.

Nor do the study results include many other types of damage caused by air pollution: lower crop yields on farms in polluted areas; damages to materials as they are eaten away by acidic pollutants; or the cost of more frequent repainting of houses in dirty areas.

For years now, the public has been saying -- and the opinion polls confirm -- that it wants cleaner air. . . not necessarily for any specific economic benefit, but because they just plain want it. A second part of the air-quality study tested the strength of that desire. . . and it found that people do, indeed, place a monetary value on environmental considerations that have traditionally been considered intangible. They are willing, in sum, to put their money where their mouths are.

The researchers arrived at that conclusion in two ways: through interviews with homeowners in the Los Angeles area, and through the comparison of the selling prices on homes in the area that were comparable in all respects but one: smog-levels.

The interview method -- conducted with an ingenious series of maps and views illustrating various levels of smog -- indicated that Los Angeles residents would pay \$650 million per year for a 30 percent improvement in air quality. That averages out to \$350 per household.

Such estimates by individuals, no matter how painstakingly arrived at, are always suspect. So the researchers compared these estimates with actual selling prices. Through this method, they determined that 30 percent better air quality brought an annual value of \$950 million -- an average of \$500 per house. In effect, far from overestimating the worth of cleaner air and higher visibility, people in Los Angeles are paying more for it than they said they would.

This observation, moreover, is backed up by Los Angeles businessmen. A spokesman for the California Association of Realtors told the Washington Post that "there is no question that prices in 'clean' areas are skyrocketing above those in residential areas once considered more fashionable, but that are now blanketed by smog." A real estate agent said that suburban homes in the "smog belt" had risen in price from \$25,000 to \$53,000 in the past 10 years; by contrast, comparable, \$25,000 homes in "clean" areas were selling for \$110,000.

I have no illusions that this pioneering air-quality study will turn the cost-benefit argument around, and convert the critics of environmental protection into ardent advocates. This new study requires considerable refinement before being used as a policy-making tool. We realize that the study has serious shortcomings, and so -- as they emphasize again and again -- do the authors.

But we are sufficiently confident in the study's techniques and conclusions to assert that the pollution-control investments we have made on stationary sources so far are paying their own way. Moreover, we believe that this study is among the first of many to come that will enable us to defend environmental protection on the ground of the good things that are happening, rather than to argue for it because of the bad things that are happening.

The well-known disaster at Love Canal in Niagara Falls, New York, for example, occurred because of the lack of environmental controls. So far, the clean-up there -- including costs for evacuating families and purchasing their homes -- has cost the New York government \$23 million; had the proper environmental controls been in place, an investment of about \$2 million would have made that site secure.

Similarly, the state of North Carolina may have to spend between \$2 and \$12 million to clean up PCB's illegally sprayed along roadsides at night; proper disposal of those wastes would have cost \$100,000.

Finally, the Kepone disaster at Hopewell, Virginia could have been prevented for an investment at the Life Sciences plant of \$200,000. So far, claims against the company total \$20 million. . . and it is doubtful whether a federal investment of

several billion dollars would suffice to clean up the James River.

If anyone needed a working definition of inflation, these examples would provide it. By failing to make prudent investments in environmental protection years ago, we are paying a much higher price today. I hope we will not have to go on indefinitely, defending the value of environmental protection by citing disasters.

I will do my best, as head of EPA and the Regulatory Council, to make sure that every regulation pays its own way in terms of avoiding risk and providing benefit.

But I will do my best to prevent faulty cost-benefit arguments, based on a deficient economics and stacked in favor of polluters, from reversing the repair work we have begun on our national home. We can pay for that repair work now, at substantial economic cost and national inconvenience. Or we can pay for it later -- at much greater cost.

We have made the right choice. Let's pay now.

Thank you.

We in New Jersey have long since recognized the potential magnitude of this problem, and are attempting to grapple with it to the best of our ability and resources. You have already received a paper by Dr. Buchanan which describes in some detail the history and status of hazardous chemical waste management in New Jersey. Briefly, in 1974, DEP adopted major changes in the Rules of our Bureau of Solid Waste Management. These revisions included a definition and identification of hazardous wastes, chemical wastes, lethal chemicals, bulk liquids and semiliquids to be specifically regulated; addressed land disposal and incineration of lethal chemicals and radioactive wastes; and outlined the responsibilities of the generator, haulers and disposers of hazardous wastes, other chemicals and bulk liquids. In 1976, following the closure of Kin-Buc, the last remaining commercial landfill that had accepted hazardous wastes, DEP conducted an industrial waste survey to investigate the disposition of wastes from all industrial firms in the State. In addition, DEP began developing an overall hazardous waste management plan for New Jersey. DEP has also developed a hazardous waste manifest system to account for waste from its point of generation to the point of ultimate disposal. In 1978, the final version of the Manifest System was put into place. DEP is currently working on rules to address the issues of facility siting, design, operation, closure and perpetual maintenance. We expect these regulations to be adopted within the next few months. Concurrently, DEP has developed a two tier strategy for hazardous waste management: a long term and a short term approach. These strategies are outlined in Dr. Buchanan's comprehensive paper that has been submitted to you already.

Separate from our Hazardous Waste Program, but also relevant to DEP's activities regarding hazardous and chemical waste, are the activities of DEP's Program on Environmental Cancer and Toxic Substances (PECTS). The major programs of PECTS are a state-wide groundwater survey, extensive surface water monitoring, and air sampling activities. While not specifically focussed on hazardous waste problems, these activities will help us identify those contaminated sites that are the result of improper hazardous waste disposal. In fact, one of the current activities of PECTS is a search for old, now unused, chemical waste landfills. In addition, New Jersey's pioneering Spill Compensation and Control Act (enacted in 1977) created a fund to better deal with the 1800 separate hazardous material spill incidents that are annually reported. While this fund is generally used exclusively for spill clean up activities, the Department has invoked the fund to clean up certain illegal chemical waste disposal sites that had discharged hazardous materials to the environment. Separately I have submitted to you our recently released first report on the operation of this fund.

Due to the success of the spill fund concept, the Department is considering establishment of a second fund to remedy the inherent problems of abandoned chemical dump sites. Since several such sites are currently under action by the Department, it is clear that a very real need exists for an abandoned dump clean-up fund. If there is no concerted effort soon on the federal level in the direction of a fund of this sort, New Jersey will undertake this effort on the state level.

We in New Jersey have long since recognized the potential magnitude of this problem, and are attempting to grapple with it to the best of our ability and resources. You have already received a paper by Dr. Buchanan which describes in some detail the history and status of hazardous chemical waste management in New Jersey. Briefly, in 1974, DEP adopted major changes in the Rules of our Bureau of Solid Waste Management. These revisions included a definition and identification of hazardous wastes, chemical wastes, lethal chemicals, bulk liquids and semiliquids to be specifically regulated; addressed land disposal and incineration of lethal chemicals and radioactive wastes; and outlined the responsibilities of the generators, haulers and disposers of hazardous wastes, other chemicals and bulk liquids. In 1976, following the closure of Kin-Buc, the last remaining commercial landfill that had accepted hazardous wastes, DEP conducted an industrial waste survey to investigate the disposition of wastes from all industrial firms in the State. In addition, DEP began developing an overall hazardous waste management plan for New Jersey. DEP has also developed a hazardous waste manifest system to account for waste from its point of generation to the point of ultimate disposal. In 1978, the final version of the Manifest System was put into place. DEP is currently working on rules to address the issues of facility siting, design, operation, closure and perpetual maintenance. We expect these regulations to be adopted within the next few months. Concurrently, DEP has developed a two tier strategy for hazardous waste management: a long term and a short term approach. These strategies are outlined in Dr. Buchanan's comprehensive paper that has been submitted to you already.

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As a consequence of these broad programmatic efforts, we have found and are dealing with many specific problem sites in the State in a variety of ways. I will not go into detail on these discrete problems at this point, but the following list includes some of the most important hazardous and chemical waste issues that we are involved with:

- Lawsuit regarding mercury contamination in the Hackensack Meadowlands.
- Fire and explosion at Rollins Environmental Services.
- Kin-Buc Landfill.
- Chemical Control Corporation.
- A-Z Chemical Corporation.
- Jackson Township groundwater contamination problem.
- Scientific Chemical Processing.

I would be glad to discuss the details of these various situations with the Committee. A series of documents relating to most of these issues has been submitted to the Committee staff.

I think that everyone here today recognizes that the issue of hazardous waste disposal is a national problem. The full legacies of this problem for future generations will not be realized for years to come, but there must be a commitment now to set into motion programs which will control effectively what we know exists today, to clean up those problems that are due to past improper practices, and to prevent the occurrence of more such problems in the future.

We totally supported the proposed substantial increase in funds to implement the Toxic Substances Control Act. That program will deal directly with the introduction of chemicals into society. As far as the toxic residuals from existing processes, the Resource Conservation and Recovery Act (RCRA) is a major step forward in terms of legislation to deal with these problems, but it must be implemented more quickly in order to demonstrate our ability to manage this complex aspect of pollution control. RCRA has given us a shot in the arm, as has our own state legislature, by infusing new monies into our effort and those new monies are bearing fruit in the identification and control of inadequate disposal methods. The horror stories of toxic wastes disposal are all too well known. Just to cite one, the more we monitor our groundwater, the more we are finding suspect chemicals that should not be there. In short, as we look for problems, we find them -- and then take the steps to prevent them from affecting human health. We can only wonder what is happening in those states where no one is ever looking for the problems.

We have supported the proposed increase of funds in federal hazardous waste management assistance to states under RCRA. However, at the same time we have serious reservations about the proposal to cut \$5.2 million in solid waste management planning activities which include more detailed inventories of our land disposal facilities. This proposed reduction in financial support comes at a critical time when the federal EPA is in the process of putting rules in place and

states are gearing up to comply with them. We believe that this cut will severely limit the state and local government efforts to implement resource recovery and to upgrade existing land disposal facilities.

The nation, as a whole, needs a way to deal with abandoned chemical dumpsites. We need a better way to encourage actions to deal with inadequate chemical treatment facilities, and we need ways to encourage competent firms to get into the business of sophisticated waste disposal.

The Department believes it is absolutely necessary that the federal government establish a multimillion dollar fund to remedy the problems created by old abandoned chemical waste sites such as the one at Love Canal and facilities closed down due to irresponsible operational practices where sufficient corporation funds are not available for clean up and state and local governments must assume the burden. In January 1979, Governor Byrne called on the Carter Administration to support comprehensive federal legislation to assist states in funding clean up programs and compensation for old abandoned chemical dumpsites (see attached letter). We are told that the Carter administration plans to propose a comprehensive federal liability and compensation scheme that will cover not only abandoned chemical waste sites, but also oil spills and spills of other "hazardous substances" (chemicals) as well. While federal legislation is surely needed in each of these areas, we believe it is a mistake to tie the chemical legislation to the Oil Spill bill. It is quite clear that the abandoned chemical waste site problem will be an expensive and complicated one to solve. Development of the legislation needed to do it is sure to generate political battles over the question of who will pay to clean up the Love Canals and the Valleys of the Drums in this country. There will be numerous other questions, such as how big a fund should it be, and how should it be established.

Then there is questions of remedy and cleanup -- what does it mean, and how much will it cost? We read, for example, that a study prepared for EPA (the Hart study) found that the number of hazardous waste sites is between 32,254 and 50,665, and that the number of sites posing significant immediate hazards is between 1,204 and 2,027. The cost for simply containing the wastes at the high-problem sites was estimated at between \$1.8 billion and \$3.1 billion, and the cost for "ultimate" cleanup at \$13.1 billion to \$22.1 billion. But on March 2 when EPA discussed the dump site problem before the Senate Environmental Pollution Subcommittee, the agency presented figures nearly twice as high. The figure for cleaning up all the abandoned dump sites which is currently being carried in the popular press is on the order of \$50 billion.

Clearly the country is not going to be able to pay for this cleanup all at once. Priorities are going to have to be established so that the worst dump sites and the worst problems are dealt with first. Given the sheer numbers of dump sites, for example, it will probably be necessary to first "stabilize" many of them, by providing leachate collection and treatment systems, evacuating exposed populations, and so forth, while leaving the job of ultimate cleanup for a later date.

I do not mean to run down a checklist of all the many questions that will have to be resolved in order for Congress to produce a final bill on abandoned dump sites. The point I want to emphasize is that working out the details of a bill will take time. The Oil Spill "Superfund" legislation was first proposed in Congress five years ago, and the country is still waiting for it. Even in the present atmosphere of crisis generated by catastrophes like the one at Love Canal and the media attention that has been focused on them, there is no reason to believe that dump legislation will be any less difficult to write than the Oil Spill Superfund bill. To tie them together, it seems to us, will only guarantee that both will be unduly delayed.

As I stated earlier, we also need ways to encourage competitive firms to get into the business of sophisticated waste disposal technology. This would include economic incentives, attention to liability and resolution of siting problems.

Like any other high technology facilities (such as nuclear power plants), hazardous waste facilities are often not welcomed by municipalities, even though such facilities serve broad social needs. This threatens to become a major stumbling block to many states' programs and apparently to the federal government as well. Examples of recent decisions such as the Bordentown, New Jersey and Wilsonville, Illinois cases, among others, foretell a nation of hazardous waste generators without adequate disposal sites. The obvious extreme alternatives are either clandestine disposal or an outright termination of industrial operations. Clearly, since there is no authority for the siting of hazardous waste facilities within RCRA, the basic premise of recycling or controlled disposal may not be realized. We must face the need to develop a reasoned method of making decisions for sites for these facilities: one option would be a federal-state partnership to provide a combination of economic incentives and regulatory review that will ensure safe and sound operation of the facilities by their private sector owners. Another option might be the use of publicly owned lands, with appropriate buffer zones, for siting such facilities. Other options are also worth considering, but it is clear to me that traditional mechanisms have not met the pressing needs in this area. Thus new, perhaps unprecedented mechanisms may have to be invented.

Further, as a portion of the overall siting authority program, the federal government should consider alternatives for liability insurance programs that may aid in public acceptance of hazardous waste sites. If the public can be assured that liability insurance will cover potential losses, public opposition to these sites may be reduced.

Here again, we see the need for a federal fund to back up the resources of the private liability insurance market. Recently, for example, in hearings on its proposed hazardous waste regulations under RCRA, EPA was told that many if not most of the hazardous waste disposal companies that would be affected by the proposed regulations will be unable to meet the financial responsibility requirements.

this is not surprising in light of the enormous potential for liability that can result from an incident of improper chemical disposal. If the private insurance market cannot supply sufficient coverage to assure neighbors of hazardous waste disposal facilities that they will be fully compensated in the event of unexpected contamination, it seems likely that the federal government will have to provide supplemental coverage if the public is to be reassured on this point.

Finally, the Department believes it is absolutely essential that companies and principals involved in blatant, malicious illegal disposal of toxic chemical wastes be not only criminally prosecuted, but ultimately debarred from doing business. All too often the names of corporations and/or principals appear in case after case of illegal disposal activities. When one illicit operation is shut down by the state, another springs up to take its place, many times with the very same principals to reinitiate their insidious operations. It is extremely difficult, if not impossible, to control this situation under present conditions. Therefore, a concerted effort must be made once and for all to terminate illegal operations and prevent their principals from gaining other foot holds.

Unfortunately, as in many other areas of illegal activity, the violators' are abetted in their evasions by state corporation laws which make it easy to hide the real principals behind a business entity. Abuses of the corporation laws have led some individuals, such as Ralph Nader, to call for the federal chartering of corporations. While I am not suggesting that Congress need go that far, I do believe that criminal activity in the hazardous waste field could be more easily suppressed if there were federal registration and disclosure requirements analogous to those enforced in the securities field. Specifically, any corporation engaged in the transportation or disposal of hazardous wastes should be required to disclose the identities of its principal shareholders. Persons who have been convicted of violations of state or federal criminal laws related to waste disposal should be prohibited from having any interest in a corporation engaged in the waste transportation or disposal business. Also, any corporation which holds a substantial interest in a subsidiary engaged in the waste business should be subject to similar requirements.

Finally, the current penalties for malicious, willful, illegal disposal of toxic and hazardous chemicals wastes are too mild. New legislation should provide for jail sentences of up to ten years, especially if the dumping is proven to have resulted in personal injuries or disease. Deaths caused by illegal dumping should be prosecuted as manslaughter. Furthermore, participants in a scheme to illegally dump chemical wastes should be prosecutable as co-conspirators and be liable to the same degree as the principals who do the actual dumping. It is time that these individuals be treated as what they are - poisoners of the nation's wells and rivers.

This concludes my prepared remarks on the issue of hazardous waste disposal and the problems it poses for both New Jersey and the nation as a whole. I would like to thank the Committee for this opportunity to present this statement.

PRELIMINARY ASSESSMENT OF CLEANUP COSTS
FOR NATIONAL HAZARDOUS WASTE PROBLEMS

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U.S. ENVIRONMENTAL PROTECTION AGENCY
1979

Page 37 of the report submitted by the contractor on February 23, 1979, has been replaced by new pages (37, 37-A, and 37-B). These pages clarify and expand the assumptions concerning financial viability considerations and make clear the distinctions between Level I and Level II costs.

This report has been reviewed by the U.S. Environmental Protection Agency and approved for publication. Its publication does not specify that the contents necessarily reflect the views and policies of the U.S. Environmental Protection Agency, nor does mention of commercial products constitute endorsement or recommendation for use by the U.S. Government.

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Assessment of Cleanup Costs for Nationwide
Hazardous Waste Problems

I. Introduction

A. Purpose

The purpose of this study is to develop a projection of potential costs for cleanup of mismanaged hazardous and radioactive waste disposal sites throughout the country. This report provides preliminary results based upon an initial assessment phase which was completed in 60 days, pursuant to contract requirements. This cost assessment will be used by EPA and, in turn, by OMB to assist in the development of a National policy for the mitigation of hazardous waste mismanagement problems existing throughout the country. Due to (1) the many uncertainties that exist as to the number of sites that may now (or in the future) pose significant threat to public health and/or the environment, (2) the great variability of problem circumstances from site to site, and (3) unresolved questions as to whether cleanup cost liabilities will fall to the public or private sector, it was not possible to attach an exact cost figure to governmental funding requirements for mitigating these hazardous waste problems. Nonetheless, this study represents a first attempt to extrapolate the order of magnitude of the expenditures needed to clean up the Nation's significant hazardous waste problems and thus should provide guidance to OMB for reaching near-term budgetary decisions.

8. Scope

In order to provide needed background data for this study, EPA Headquarters requested each of its Regions to develop an inventory of hazardous waste problems. A copy of the letter from EPA to the Regions is included in the Appendix. Information requested from the Regions included:

1. A rough estimate of the total number of landfill, storage and other sites that may contain hazardous wastes in any quantity which now or potentially could cause adverse impact on public health or the environment.
2. A rough estimate of the number of these sites that may contain significant quantities of hazardous wastes that could cause significant imminent hazard to public health (this is a subset of above estimate):
3. An inventory and description of those sites for which EPA has information in its files (this is a further subset of the above estimates).
4. An estimate of the costs of (a) assessing the public health and environmental hazard, (b) engineering studies to determine remedial measures, and (c) remedial measures for a dozen or more sites which typify various types of incidents.

In addition to inventory information in these four areas, the Regions provided information on 103 sites. This material, in conjunction with information from Headquarters' files and from the files of the Contractor regarding 129 additional sites, constitute the data base for this study. All immediately available files, reports and data concerning the 232 cases were reviewed, abstracted and categorized. Twenty-four representative cases were then selected for more in-depth study. In selecting the 24 cases, the prevalence of the types of facilities—as represented by the larger population of 232 sites—was taken into consideration. Efforts were made to match the proportion of site types in the 24 selected cases to the proportion in the 232 cases.

Data availability was also a determining factor in the selection process. Where sufficient information existed in the assembled files as to the scope of the problem, appropriate remedies (either executed or planned) and cleanup costs, it was not considered fruitful to conduct additional assessment. Since adequate evaluation of sites for which information and problem documentation were scanty could not be performed within the time frame or budget allocated to this study, such sites were not considered as candidates for the 24 case evaluations. The sites selected, therefore, included representative cases where it was anticipated that remedial approaches and costs could be developed through review of files maintained at Regional, State or local governmental offices, discussion with knowledgeable personnel within those offices, and/or site visits. Neither problem severity nor cleanup costs associated with specific sites was a factor in the selection process. The 24 representative cases range significantly in terms of problem severity and in estimated costs of cleanup.

Investigation of these sites was conducted during a four-week period and involved arranging and carrying out information-gathering and/or site visits to the States of Washington, Georgia, California, Colorado, Illinois, Tennessee, Utah, Indiana, Texas and Virginia. Information obtained from examination of the hazardous waste problems and the 24 case studies was used in combination with the hazardous waste problem prevalence data provided by the Regions in order to develop cleanup cost extrapolations. Methods employed in conducting this extrapolation, along with a discussion of the variables that affect the validity of such an extrapolation, are presented in the next section.

C. Extrapolation Approach

1. Methodology

The methodology for extrapolating the cleanup costs for all potential hazardous waste problems which exist throughout the country is based on the data available at the time of writing, and is consequently as reliable as the data base is complete.

In order to develop an understanding of the general types of hazardous waste problems that exist and the national prevalence of such general types of problems, the 232 cases examined during this study were categorized by facility type, waste type and problem type. These categories are listed below:

I. Facility Type

1. above ground storage/disposal of wastes
2. uncovered pits, ponds and lagoons—below grade (or bermed)
3. below grade covered pits and landfills
4. underground injection facilities
5. direct dumping to surface water
6. natural impoundments

II. Problem Type

1. explosion
2. fire
3. air pollution
4. ground water contamination (drinking water supply)
5. surface water contamination (drinking water supply)
6. ecological impact (surface water, including wetlands)

III. Waste Type

1. pesticides and other highly toxic organics
2. other organic compounds*
3. inorganics
4. radioactive wastes
5. explosives and flammables

For each of these three categories, the major elements within each category were identified and generalized to provide a limited number of subcategories based on common remedial measures which could be applied to them.

There are a finite number of evaluative and remedial measures that may be applicable to the universe of facility/waste/problem type combinations. Major categories include the following:

1. Problem investigation
2. Design of solution
3. Waste treatment
4. Transportation
5. Secure disposal
6. Site treatment and site modification
7. Monitoring
8. Site security
9. Off-site treatment/disposal
10. Administration and enforcement

There are, of course, numerous individual remedial measures within each category. For example, one method of site treatment (leachate and runoff control) could involve grading, ditching, diking, ponding, and/or

*"Other organic compounds" may be defined as organic compounds which are generally not included on lists of toxic substances and/or are not usually considered toxic in the parts per billion range of concentration (e.g., oil and grease).

construction of leachate collection trenches or wells. A wide range of individual actions or remedies was considered for each case.

The general methodology employed in study and extrapolation is summarized below:

1. determine unit costs of all appropriate remedial measures—

This was performed by reviewing cost data contained in the information gathered on the 232 cases. It should be noted that remedial costs provided in the existing data base are generally limited to those activities undertaken on an emergency basis to immediately reduce the risks to human health and, in most cases, studies probably do not include costs associated with measures that would significantly reduce the source of contaminant migration. Although some cost information was provided on about 50 cases, most was very scanty, did not itemize specific expenditures, was outdated, or represented very rough estimates or wide ranges. Unit cost data were thus supplemented with information from reports and publications dealing with the handling of non-hazardous wastes, as directly applicable to the handling of hazardous wastes. Unit cost data were further verified by use of engineering guides and supplier price data.

2. develop conceptual plans for mitigation and for solution of the 24 selected cases and determine costs—

This was performed by selecting appropriate remedial measures for two levels of problem treatment. Level 1 costs estimate nationwide cleanup costs under the assumption that measures will be taken on an emergency basis to prevent existing problems from becoming worse, while Level 2 reflects those costs that would be associated with ultimate remedy of the Nation's potential hazardous waste problems. Costs for three phases of action were included in the estimates: (1) problem assessment, (2) design of remedy, (3) implementation of remedy. No third-party costs were included in the cost estimates. The estimations involved applying unit costs to the appropriate quantities involved in each case.

3. extrapolate cleanup costs—

This was performed by applying information from the overall data base and cleanup costs developed for the 24 case studies to the National population of known and suspected hazardous waste problems which may require special governmental funding for cleanup. Costs were only computed for abandoned and abandonable sites. Several methods of extrapolation were explored, and the results are presented in a subsequent chapter of this report.

For this study, the term Level I mitigative measures refers to the minimum acceptable cleanup activities deemed appropriate for a site. This term addresses those efforts which could be accomplished on an emergency basis (usually in less time than one year) and which would significantly reduce the present rate of hazardous waste migration into the environment. For purposes of this report, the efforts to accomplish this degree of cleanup for the 24 sites studied included such items as site investigation, study and design, waste removal or clay cover, perimeter protection using dikes or ditches, cut-off barriers, security fencing, monitoring, and administration. The term Level II mitigative measures, as used in this report, implies a thorough site cleanup which would afford permanent protection to human health and the environment. In addition to certain short-term cleanup requirements used for Level I, complete waste removal and redisposal at secured facilities were applied to most of the sites. Hazardous waste remedial activities, in general, included the same items used for Level I mitigation plus, in many instances, allowances for testing on-site contaminated soils in addition to the treatment for concentrated wastes. Judgment was used for each of the investigated sites in evaluating the appropriate measures and methods for cleanup required to meet Level I and Level II criteria.

2. Uncertainties

There are usually a number of uncertainties and unknowns associated with sample data which can affect the accuracy of extrapolation to the population as a whole. Making a sound projection requires an effort to identify these unknowns and taken them into consideration in the extrapolation process. In such cases, "best professional estimates" were made.

There are at least five uncertainties and unknowns which must be considered in projecting potential costs for cleaning up mismanaged hazardous and radioactive waste disposal sites.

First, the number of sites used as the basis of estimation was relatively small. The cost projections were based on limited information for 232 cases of hazardous waste mismanagement and more in-depth information on 24 representative cases.

Second, generalization was difficult because of the broad range of potential problems represented by the 232 cases. Because of the number of factors that affect the costs of cleanup (e.g. site size, volume of waste, extent of contamination, distance to a more secure landfill, etc.), each site in reality is distinct from the others. Because of this lack of a definitive common denominator between sites or groups of sites, the extrapolation had to be based on average costs for cleaning up facility type/problem type/waste type categories. These average costs mask substantial site-specific variation. For example, costs of adequate disposal of liquid wastes ranged from about \$0.11/gallon to \$11/gallon.

Thirdly, there is a lack of sufficient data on the very factors that most affect the costs of cleanup, namely site size, volume of waste, extent of contamination, and status of cleanup measures taken to date. In addition, in many cases the data that were available were outdated, or proved wrong upon investigation. For example, some of the sites in the data base proved not to be significant hazardous waste problems. All available data were evaluated to the extent possible within the short time frame of this contract; but, because of such constraints, the accuracy of the data base cannot be vouchsafed.

A fourth uncertainty in the known data base concerns the question of liability for funding the site cleanup. Many of the sites have been abandoned by the owner; in other instances, the owner does not possess the financial capability to fund the cleanup. In such cases, the government (federal, state, local) must provide the funds. In many instances, however, it could not be ascertained from the data available if a site had been abandoned or if an owner could be identified as financially capable of funding the cleanup. Such unresolved questions leave uncertain whether the public or private sector will be liable for cleanup costs related to these sites. Consequently, an estimate was made based on best available evidence of the probable percentage of sites which are abandoned or abandonable. This estimate was one of the major factors which affects government funding requirements, and was therefore an important aspect of the extrapolation process.

A fifth area in which current data were found to be lacking is the status of cleanup efforts already accomplished. Many of the sites are in various stages of cleanup, some simply involving partial removal of the waste, others involving a level of cleanup corresponding to our Level I and Level II measures. The Level I and Level II costs are presented without offering a judgement as to which level of remedial measures may be more warranted in each particular instance. Such a judgement would have to be made on a case-by-case basis and is outside the scope of this project.

II. National Survey Results

A. Inventory of Hazardous Waste Sites by Region

In the initial letter from EPA Headquarters, the Regions were asked to provide information for those sites for which data on size, waste volume, site conditions, and related areas were available. The combined responses from the Regions estimated (a) 32,254 sites with some hazardous wastes, (b) 838 sites with at least potentially significant problems, and provided (c) varying amounts of information on 103 sites. The estimates by Region are presented in Table 1. However, a review of the Regions' submittals, and specifically their site prevalence "methodologies," indicates that (a) several made highly qualitative estimates, and (b) many types of sites viewed as potential problem areas were left out due to lack of information.

The assumptions made by each of the Regions are outlined in Table 2. It should be noted that most of the Regions stated that they could not provide verifiable, quantitative estimates for any of these sites, due to a lack of information on the nature, location and condition of sites and the frequent problems of what wastes in various quantities constitute a health hazard. A nationwide survey of open dumps (which is likely to assist in the the efforts to estimate the number of hazardous waste sites) was mandated by RCRA for completion in two years, but recent statements by Thomas Jorling, the Assistant Administrator of EPA's Office of Water and Waste Management,

TABLE 1
QUANTITATIVE SUMMARY OF EPA REGIONAL ESTIMATES
OF NATIONWIDE HAZARDOUS WASTE SITES

Region	No. of Sites Which May Contain Hazardous Wastes	No. of Sites Which May Contain Significant Quantities of Hazardous Waste	No. of Sites on Which Information Was Supplied
I	1,200	275	5
II	509	25	4
III	5,000	12	5
IV	14,000	210	16
V	1,800	Unknown	22
VI	320	19	3
VII	8,000	Unknown	7
VIII	25	10	9
IX	400	37	1
X	1,000	250	31
	32,254*	838	103

* Due to the estimation procedures employed, the last three digits of this number lack significance.

TABLE 2

HAZARDOUS WASTE SITE PREVALENCE METHODOLOGIES OF EPA REGIONS

<u>Region</u>	<u>Assumptions</u>
I	. All Landfills May Contain Hazardous Waste . Surface Impoundments <u>Not</u> Included. . All Metropolitan-Area Landfills May Contain <u>Significant</u> Quantities of Hazardous Waste
II	. No Methodology Given
III	. No Methodology Given
IV	. Different Methodology for Each State in the Region
V	. No Methodology Given
VI	. All Active Municipal Sites May Contain Hazardous Waste . All Closed Municipal Sites May Contain Hazardous Wastes . Pits, Ponds and Lagoons (very many in this region) are not Included due to Lack of Data . Pesticide Disposal (important in this region) Also Left Out
VII	. No Methodology Given
VIII	. No On-Site Industrial Disposal Sites are Included . Refer to Extensive Uranium Mining and Associated Mill Tailings Sites of Which Only a Few are Included Here

TABLE 2 (continued)

<u>Region</u>	<u>Assumptions</u>
IX	. All Based on States' "Best Professional Estimates" Without Any Real Data Base
X	. Best Rough Estimate of 1,000 Municipal and Industrial Sites Was Used but this Estimate Cannot Be Substantiated by Region's File Data

have made it clear that this data collection effort will not be available until 1982.¹ Due to the delays in this Federal effort and the general lack of equivalent data on the regional or state level, the ten Regions were left with mostly qualitative estimate options. In fact, two Regions (V and VII) did not choose to offer any estimates of the number of serious sites within their areas.

Alternative Prevalence Methodology

Initial review of the Regions' submittals, coupled with their admissions of the extremely tentative nature of the data provided, suggested that a revised inventory of all sites containing hazardous wastes (as well as those within this group that represent the most serious environmental threat) may be required before any meaningful assessment of nationwide costs to correct these problems could be developed. The four procedural steps identified for such an inventory are the following:

STEP 1: Identify Active Sites. Those treatment, storage and disposal facilities presently handling various types and volumes of hazardous wastes must be estimated, including such factors as (a) waste type(s); (b) technology used (e.g., landfill, lagooning, incineration, etc.); and (c) condition of the site, including whether it is in an environmentally sensitive area (e.g., wetlands, floodplain, etc.).

1. "EPA Without Policy to Discover Imminently Dangerous Waste Sites", Environmental Reporter, November 3, 1978.

- STEP 2: Identify Inactive Sites. The number of sites formerly used as hazardous waste facilities must be estimated, along with the range of information identified in Step 1 above.
- STEP 3: Assess Environmental Adequacy of Site. Based on site data and treatment, storage and disposal facility guidelines as mandated under RCRA, the adequacy of both active and inactive sites must be determined.
- STEP 4: Assion Required Level of Clean-up. The necessity of Level I measures (e.g., emergency mitigative measures), Level II steps (e.g., extensive clean-up procedures, removal of wastes, etc.) or some phased combination of the two must be assessed.

The following sections describe mechanisms that can be used to perform the first three of these steps.

STEP 1: Identify Active Sites. Section 3005 of RCRA requires that all facilities involved in the treatment, storage or disposal of hazardous wastes obtain permits. To assist EPA in defining and characterizing the businesses and government entities which may require such permits, Fred C. Hart Associates developed a methodology that estimated the following information on these facilities: (a) number and geographic distribution of establishments; (b) number of employees and annual revenues; (c) volume and types of hazardous wastes; and (d) method of waste treatment or disposal.¹ The key element of the methodology was the combining of two data sources:

1. Reference: Fred C. Hart Associates, Inc., Demonstrational/ Instructional Materials in Hazardous Waste Management, EPA Contract #68-01-4-55, August, 1977.

1. studies of hazardous waste management practices performed for EPA for the 16 industries identified as the major sources of hazardous waste (along with contacting state and Federal agency officials); and
2. data from the Census of Manufacturing, Census of Retail, and the U.S. Department of Commerce sources that profile the Nation's economy.

Figure 1 shows how these factors work together to generate the number of active hazardous treatment sites. The analysis in the original study required numerous assumptions to fill in often substantial data gaps in all aspects of the methodology (e.g. data were unavailable on the two largest industrial generators). Readers interested in more detail are directed to the original report. Table 3 summarizes the estimated number of facilities that presently handle hazardous wastes, broken out by EPA Region. Table 4 presents this information by Region and industry category, totals the three subcategories of permittees, and assigns the governmental facilities to the Regions by population. The estimate of 19,365 sites in Table 3 is therefore the number of sites needed to handle the existing hazardous waste stream. In the next section, the question of inactive sites is addressed.

STEP 2: Identification of Inactive Sites. The serious environmental problems that have surfaced in areas such as the Love Canal site in Niagara Falls, New York, have clearly shown that the toxicity of "disposed" hazardous wastes can last for decades. The methodology proposed here can provide a rough, "first cut" estimate of these sites, but the serious nature of the problem requires that it receive more extensive analyses in the near future.

Figure 1

Methodology for Estimating the
Number of HW Treatment/Storage Sites

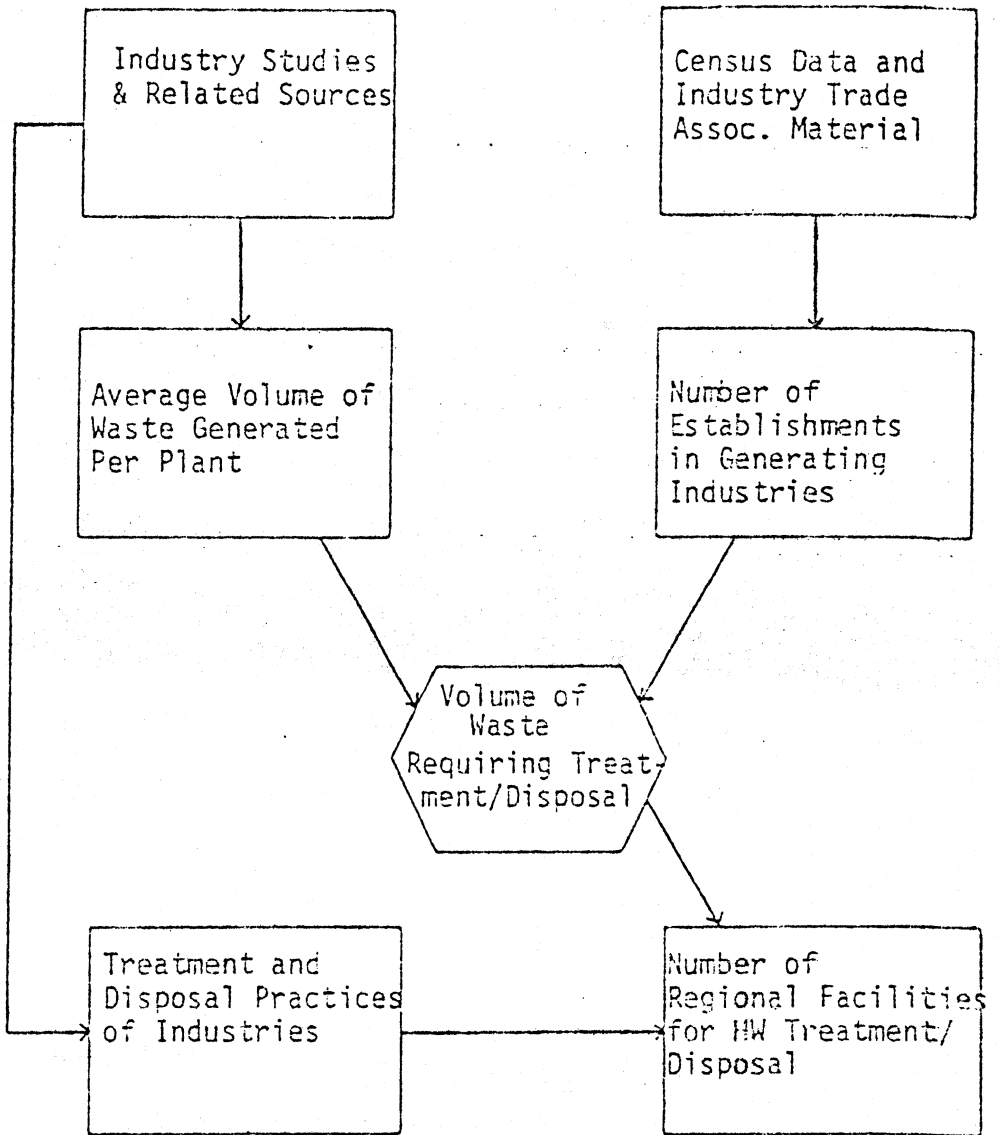


TABLE 3

SUMMARY OF THE ESTIMATED NUMBER OF
ACTIVE HAZARDOUS WASTE SITES BY EPA REGION

I	1,560
II	2,243
III	1,850
IV	2,711
V	4,665
VI	1,956
VII	1,180
VIII	613
IX	1,949
X	<u>638</u>
	19,365

TABLE 4

ESTIMATED NUMBER OF PERMITTEES BY FACILITY CATEGORY
AND EPA REGION

FACILITY INDUSTRY:	R E G I O N										TOTAL
	I	II	III	IV	V	VI	VII	VIII	IX	X	
1. Organic Chemicals, Pesticides and Explosives	58	259	229	321	310	220	108	60	158	48	1,781
2. Ferrous Metals	1	19	63	37	59	12	2	3	12	10	214
3. Electroplating											
a. Job Shops	109	92	59	53	287	33	38	11	53	16	751
b. Captive Shops	580	492	312	276	1,523	175	204	56	283	88	4,000
4. Inorganic Chemicals	2	16	15	27	21	34	4	4	9	6	138
5. Nonferrous Metals	10	38	40	34	90	39	16	12	44	20	341
6. Textiles	24	35	19	94	7	4	1		5	1	190
7. Petroleum Refining		5	10	9	20	45	8	17	21	7	143
8. Plastics Materials and Synthetics	35	53	59	94	99	55	8	2	54	2	452
9. Special Machinery	121	197	89	145	273	53	40	13	148	35	1,115
10. Leather Tanning	11	8	2	1	4		1		2	1	30
11. a. Paint and Allied Products	4	13	5	8	18	6	3	1	10	2	70
b. Contract Solvent Reclaiming	5	17	7	10	23	7	4	1	13	3	90
c. Factory Applied Coatings											
12. Pharmaceuticals	22	113	46	42	85	27	32	8	53	6	440
13. Petroleum Re-refining and Processing		4	3	6	6	4	2	2	6	2	35
14. Rubber	26	27	19	28	73	12	7	3	27	4	225
15. Electronic Components	43	76	30	22	65	18	10	5	90	4	371
16. Batteries	4	1	5	9	11	5	4	1	8	3	51
17. Hazardous Waste Management Industry	6	18	9	7	27	10	8	1	19	5	110
SUBTOTAL:	1,057	1,487	1,021	1,223	3,010	761	500	200	1,025	254	10,558
GOVERNMENTAL:											
18. Publicly Owned Treatment Works				NOT DETERMINABLE							959
19. Solid Waste Disposal Facilities				NOT DETERMINABLE							413
20. Federal Installations				NOT DETERMINABLE							251
SUBTOTAL:											1,623
OTHERS:											
21. a. Hospitals	397	554	653	1,220	1,305	1,027	591	359	741	320	7,174
b. Medical Laboratories				NOT DETERMINABLE							
22. Research Facilities				NOT DETERMINABLE							
23. Dry Cleaning Plants											
24. Service Stations											
SUBTOTAL:	397	554	653	1,220	1,305	1,027	591	359	741	320	7,174

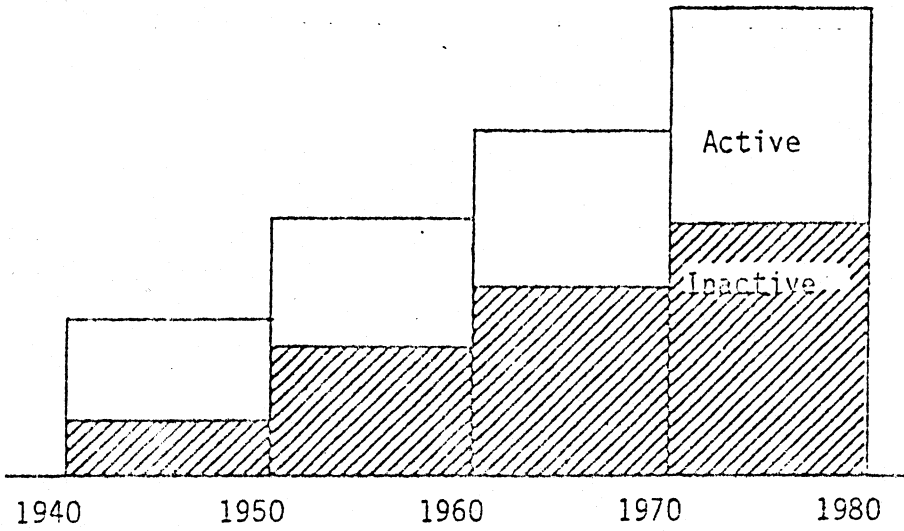
1. Geographic distribution of potential permittees is assumed to be proportionate to the distribution of hazardous waste generating establishments provided in Table 2.

Figure 2 demonstrates how the total number of sites containing hazardous wastes (active and closed) accumulate over time. As firms use a site's full capacity (assumed to be ten years), the inactive site then joins the total site inventory for as long as its wastes remain a threat. The guidelines developed under RCRA for properly operated and closed sites required 20 years of post-closure monitoring and maintenance. One would assume that inadequate sites could require monitoring and maintenance for much longer than 20 years, especially for those substances that are highly resistant to decomposition when buried. An arbitrary figure of 40 years will be assigned here—twice as long as for adequate sites. In the context of Figure 2, this means that from one ten-year period to the next, 25 percent of the inactive sites no longer pose any health threat (e.g., an inventory of inactive sites of potential concern made in 1975 would only include 75 percent of those sites that were on the 1965 inactive site list). This figure, however, represents only a rough estimation and does not take into account a number of other variables, including the increasing quality of such facilities over time.

A review of Department of Commerce data on the number of firms in the hazardous waste generating or treating industries, outlined in Table 4, showed that there were approximately 77 percent as many establishments in 1963 as in the estimates used for 1978. However, the higher 1978 number is mainly due to the increases in dry cleaning plants, research facilities and service stations, none of which was assumed to affect the number of treatment, storage or disposal sites as outlined in Table 4. In other industrial categories, the number of establishments actually fell between 1963 and 1978 due to the merger of smaller firms or foreign competition (e.g., leather and tanning fell by over 50 percent).

Figure 2

Accumulation of Active and
Inactive HW Sites Over Time



Consequently, any exact empirical estimates will be impossible here, especially when data from earlier periods are considered, and the numerous assumptions needed to make existing active site estimates are remembered. It will therefore be assumed that the number of generators and associated sites will decrease every ten years at a rate = $[\text{.80} - N(\text{.05})]$, where N is the number of decades away from the 1970-80 period (e.g., the average number of generators in the 1940-50 period would be $[\text{.80} - 3(\text{.05})] = 65$ percent of the 1970-80 number). The numbers for the past 50 years are shown in Table 5. A sample calculation is shown in Appendix B of this report.

The total of 50,644 sites is therefore a very rough estimate of the number of active and inactive sites that contain hazardous wastes and (by virtue of this characteristic alone) may pose an environmental or health threat.

STEP 3: Assessment of Site's Environmental Adequacy. Eight Regions provided estimates of the number of hazardous waste sites which may include significant amounts of waste and the number of sites which may pose a significant health threat. The eight Regions estimated that 838 sites of the 22,454 sites (or approximately 4 percent) may pose significant problems. This "4% Rule" is used later in this report for extrapolation purposes.

In contrast, EPA's Office of Solid Waste recently estimated that up to 90 percent of the annual hazardous waste volume "is subject to improper waste disposal."¹ Moreover, the seriousness of a particular site

1. "Most Industrial Hazardous Wastes Subject to Improper Disposal, EPA Says," Chemical Regulations Reporter, November, 17, 1978.

TABLE 5

INVENTORY OF ESTIMATED ACTIVE AND INACTIVE HAZARDOUS WASTE SITES

<u>Decade</u>	<u>Number of Establishments Generating, Treating, or Storing Hazardous Waste¹</u>	<u>Number of Treatment, Storage or Disposal Facilities²</u>	<u>Number Included in Hazardous Waste Site Inventory</u>
1970 - 80	73,941	19,365	19,365
1960 - 70	55,456	14,524	14,524
1950 - 60	38,819	10,167	10,167
1940 - 50	25,232	6,608	6,608
1930 - 40	15,139	3,965	-
TOTAL			50,664

1. Does not include large numbers of hazardous waste generators for which no disposal practice information was available.
2. The ratio of sites to total number of establishments was assumed to remain constant over time.

is dependent on the geological nature of the area as well as on waste type and volume, and disposal methods. In a recent Fred C. Hart Associates' study, for example, it was estimated that roughly 75 percent of landfill sites were located in areas where wetlands, major aquifers and floodplains are concentrated.¹ Such locations are particularly susceptible to contamination problems. If 75 percent of the 90 percent of wastes improperly disposed are found in susceptible environmental settings and therefore create significant problems, then 34,452 of the 50,664 cases listed in Table 5 could be considered significant problem situations. This can be stated in the calculation: $(.75 \times .90)50,664 = 34,452$.

Table 6 presents the overall results of this alternative prevalence methodology effort, and compares them with the values provided by the EPA Regions. Using the EPA Regional estimates and the estimates generated here as the lower and upper bounds respectively, the total number of sites that include hazardous wastes range from roughly 32,000 to 51,000, while the number that may pose significant problems range from 1,200 to 34,000.

B. Problem Characterization

1. Overview. The review and classification of available information concerning the 232 cases included in the data base for this study provide a very useful picture of the Nation's hazardous waste problem. Table 7 presents a summary of problem prevalence in terms of facility type, problem type and waste type. Matrices of problem type/ waste type/facility type are presented in Appendix C. It was found that 85 percent of the

1. Reference: Fred C. Hart Associates, Task IV--Economic Analysis, Draft Report, EPA Contract No. 68-014895, October 12, 1978, pp. 66-74.

TABLE 6

COMPARISON OF PREVALENCE DATA IN HAZARDOUS WASTE SITES

	<u>Total Number of Hazardous Waste Sites</u>	<u>Number of Significant Problem Sites</u>	
		<u>4% Rule¹</u>	<u>Alternative Ratio²</u>
EPA Regional Estimates	32,254	1204 ¹	21,933
Alternative Methodology Estimates	50,664	2027	34,452

-
1. $.04 \times$ total number of hazardous waste sites.
 2. $(.75 \times .90) \times$ total number of hazardous waste sites.

TABLE 7

SUMMARIES: PROBLEM TYPE - FACILITY TYPE - WASTE TYPE

Number*

I.	<u>Facility Type</u>	
	1. Above ground storage/disposal	102
	2. Uncovered pits, ponds, lagoons - below grade	75
	3. Covered pits, landfills	71
	4. Underground injection	7
	5. Direct dumping into surface water	14
	6. Natural impoundments	22
		<u>291</u>
II.	<u>Problem Type</u>	
	1. Explosion	3
	2. Fire	12
	3. Air pollution	13
	4. Ground water contamination - potable supply	131
	5. Surface water contamination - potable supply	57
	6. Ecological impacts	75
		<u>291</u>
III.	<u>Waste Type</u>	
	1. Pesticides and highly toxic organics	59
	2. Other organics	93
	3. Inorganics	118
	4. Radioactive substances	19
	5. Explosives and flammables	2
		<u>291</u>

* The total number of sites described (232) is less than the total falling into separate categories (291) because some sites were listed under more than one category.

232 cases involves storage facilities, ponds or landfills (facility types 1, 2 and 3). The most prevalent problems (90 percent of the cases) are surface and ground-water contamination (problem types 4, 5 and 6), and 93 percent of the cases involve organic and inorganic contaminants (waste types 1; 2 and 3). The most common case type is a facility where organic chemical wastes are stored/disposed on the land surface and/or in ponds, and create a ground-water contamination problem.

Cases involving fires, explosion or air pollution problems only, are considerably less prevalent in the data base than those discussed above. Although air pollution problems have rarely been measured, odor problems are often mentioned in cases where the major problem is one of surface and/or ground-water contamination. In fire and explosion cases, little can be done once a facility has been destroyed by these means. Also, it is virtually impossible to predict such events, although good housekeeping practices and monitoring can help avert them.

Very few cases relating to underground injection (and virtually no cleanup cost information) are included in the data base. Also, such problems are extremely difficult to assess in terms of potential remedial costs. This category is therefore not dealt with individually in the projections presented in this report.

Direct dumping into surface water also represents unique situations. Mitigation of such problems may not be possible, or may be dealt with under Section 311 of the Clean Water Act; thus, applicability of these cases to the objective of this report is uncertain. A "direct dumping" problem, however, was included as one of the 24 selected cases examined for this report.

Similarly, radioactive waste problems are distinctive and show a low prevalence in the data base, though three cases of this nature were included in the 24 selected situations studied over the past month.

2. Site Characteristics. Table 8 presents statistics on the 232 cases reviewed. The table is indicative of the fact that little is known about many of the cases, and thus the population for the extrapolation of certain factors is limited. Nonetheless, several pertinent points can be drawn from the table:

- . Some remedial action has been taken on 26 percent of the cases for which information is available. This is indicative of substantial efforts by EPA Headquarters, the Regions, States and local authorities to seek resolution of documented hazardous waste problems.
- . Of the 80 facilities which can be tentatively categorized in terms of financial status, it appears that there may be cleanup monies available through sources other than special governmental funding for 50 percent of the facilities.
- . Of the 155 problems which can be tentatively categorized in terms of setting, 88 percent are located within floodplain, wetland and/or major aquifer areas. This would certainly support the Agency's position in drafting regulations under RCRA that such areas should be avoided in siting new hazardous waste facilities.

Other pertinent pieces of information also identified during this study include the following:

- . Reported health problems were associated with 16 of the sites, including illnesses, injuries, poisoning cases and deaths.
- . A total of 25 facilities are known to be owned by governmental entities (8 Federal, 3 State and 14 local).

TABLE 8
STATISTICAL INFORMATION ON 232 HAZARDOUS WASTE CASES

FACTORS	PERCENT OF 232 SITES
1. Sites for which some remedial action has been taken ⁽¹⁾	26%
2. Number of Active Sites	
Active	22%
Inactive	30%
Uncertain	48%
3. Financial Status ⁽²⁾	
abandoned/abandonable	17%
viable	17%
uncertain	66%
4. Setting ⁽³⁾	
located within environmentally sensitive area	59%
not located within environmentally sensitive area	8%
uncertain	33%

(1) remedial actions range from substantive efforts to explore the problems and develop remedies to completion of various cleanup measures.

(2) abandoned/abandonable sites include those identified as such within the information base (e.g., owner bankrupt); financial viability means that the facility is owned by a governmental entity, or that information submitted by Regions or contained in reports states that the owner/operator has sufficient financial resources to fund cleanup; all sites for which there is question as to financial viability or liability were counted as "uncertain".

(3) sites within "environmentally sensitive areas" are those in which a local ground or surface water resource has been damaged or is threatened.

- Of the 110 facilities which can be identified by SIC code, 69.2 percent fall into five industrial groups as follows:

38.2%	SIC 28	Chemicals & Allied Products
8.2%	SIC 14	Mining & Quarrying of Nonmetallic Minerals, Except Fuels
8.2%	SIC 33	Primary Metal Industries
7.3%	SIC 10	Metal Mining
7.3%	SIC 29	Petroleum Refining

Four more industries account for another 13.5 percent of the sites:

SIC 34 - Fabricated Metal Products; SIC 36 - Electrical & Electronic Machinery; SIC 37 - Transportation Equipment; and SIC 42 - Motor Freight Transportation & Warehousing. The remaining 17.3 percent of the sites fall into 14 SIC groups.

3. Cost Factors. Cleanup cost information (frequently cost ranges) for 52 sites was contained in the information base on the 232 sites. The total costs for 51 sites (excluding "billions" quoted for one of the sites involving radioactive wastes) are a minimum of \$322 million and a maximum of \$938 million, or \$6.3 to \$18.4 million per site. The total for the 18 classified as abandoned or abandonable was \$36 to \$225 million, or \$2 to \$12.5 million per site. Using these figures alone, and extrapolating them directly to the National population of sites which could cause significant hazardous waste problems, results in total cleanup cost estimates of \$7.6 to \$22 billion for the site population of 1,204 derived from the numbers provided by the Regions. Considering costs for the abandoned sites, extrapolated costs would range from \$2.4 to \$15 billion.

These are obviously gross estimates and the available data were screened to determine whether cost factors could be correlated with other

basic quantitative aspects related to the sites. Information on site size and/or waste quantity was available for 31 of the sites for which cost data were available. Examination of cleanup costs per acre, per drum, per gallon and per cubic yard showed erratic variation. This is further testimony to the uncertainties inherent in available data, and the lack of a common denominator for costs, reflecting the uniqueness of each case. Closer examination of 24 selected cases was used to improve the data base. The 24 cases are characterized in the following section.

III. Case Studies and Cost Extrapolations

A. Characterization of 24 Selected Cases

Twenty-four cases selected for more in-depth investigation were studied over a four-week period. Information was gathered by interviewing EPA Regional and State personnel, reviewing Regional and State files (some of which were used verbatim), and, in some cases, making site visits. Remedial measures were developed or were adapted directly from file information, based on best available information at the time of writing. These measures are intended to serve only as a conceptual approach to problem mitigation.

Remedies cannot be interpreted as recommendations because, in most cases, they were not based upon adequate study. Cleanup costs were developed by applying best engineering estimates and utilizing known cost factors from available studies. In several instances, insufficient information was available to complete Level II estimates. In these cases, Level II costs were assumed to be at least the amount of Level I costs. In one instance, only a Level II approach appeared viable.

Table 9 summarizes the facility type/problem type/waste type for each of the 24 sites, and presents available site size/waste volume data and the estimated total costs for Level I and Level II cleanup.

TABLE 9
CHARACTERIZATION OF 24 SELECTED CASES

Site	Description	Site Size/Waste Volume	Costs (\$)	
			Level I	Level II
1	-Above ground storage; uncovered pits, ponds, lagoons - below grade -Ground water contamination -Pesticides and highly toxic organics	37,000 cu. yds.	1,109,000	3,170,000
2	-Uncovered pits, ponds, lagoons -Ecological impacts -Organics; inorganics	12 acres 150 drums (55 gal.)	33,600	92,600
3	-Covered pits/landfill -Air pollution -Organics	80 acres	0	0
4	-Direct dumping into surface water -Ecological impacts -Pesticides and other highly toxic organics	18,000 cu. yds.	624,000	1,236,000
5	-Above ground storage -Surface water contamination -Organics; inorganics	5 acres 28,667 drums (55 gal.)	3,042,000	19,349,000
6	-Above ground storage -Ground water contamination -Pesticides and other highly toxic organics; other organics; inorganics	0.8 acres	21,000	1,631,000
7	-Above ground storage -Surface water contamination -Inorganics	140 acres	4,633,200	23,330,000
8	-Uncovered pits, ponds, lagoons -Ground and surface water contamination -Pesticides and other highly toxic organics; other organics; inorganics	16.7 acres 300,000 gal.	370,000	3,700,000

TABLE 9

CHARACTERIZATION OF 24 SELECTED CASES (continued)

Site	Description	Site Size/Waste Volume	Costs (\$)	
			Level I	Level II
9	-Above ground storage -Surface water contamination -Organics	11 acres 750,000 gal.	1,762,000	1,762,000*
10	-Covered pit/landfill -Ground water contamination -Organics; inorganics	2,680 acres	0	0
11	-Covered pit/landfill -Ground water contamination -Pesticides and other highly toxic organics	24,884 gal.	not applicable	617,000
12	-Above ground storage -Ground water contamination -Pesticides and other highly toxic organics	80 acres	20,000,000	200,000,000
13	-Covered pit/landfill -Ground and surface water contamination -Organics	11.7 acres	1,077,000	33,610,000
14	-Covered pit/landfill -Ground water contamination -Pesticides and other highly toxic organics	40 acres	4,845,000	4,845,000*
15	-Above ground storage -Surface water contamination -Organics; inorganics	8 acres 45,000 drums (55 gal.)	1,800,000	3,114,000
*16	-Above ground storage; uncovered pits, ponds, lagoons -Surface water contamination -Inorganics; radioactive substances	27 acres 63,000 cu. yd.	3,498,000	10,875,000
17	-Covered pit/landfill -Ground and surface water contamination -Pesticides and other highly toxic organics	50 acres 300,000 drums (55 gal.)	5,965,000	165,370,000

TABLE 9

CHARACTERIZATION OF 24 SELECTED CASES (completed)

Site	Description	Site Size/Waste Volume	Costs (\$)	
			Level I	Level II
18	-Covered pit/landfill -Ground and surface water contamination -Inorganics	10 acres 300 drums	188,000	625,000
19	-Above ground storage; covered pit/landfill -Ground water contamination -Radioactive substances	144 acres 1,400 drums (55 gal.)	340,000,000	340,000,000
20	-Above ground storage; covered pit/landfill -Ground and surface water contamination -Organics	4 acres 1000 drums (55 gal.)	295,000	3,730,000
21	-Uncovered pits, ponds, lagoons -Air pollution; surface water contamination -Pesticides and other highly toxic organics	77,780 cu. yds. 20,460 gal.	17,000,000	22,600,000
22	-Above ground storage; uncovered pits, ponds, lagoons -Surface water contamination -Pesticides and other highly toxic organics	23,863 cu. yds.	2,000,000	2,000,000*
23	-Above ground storage -Ground water contamination -Organics; inorganics	4 acres 1,850,000 gal.	160,000	597,000
24	-Covered pit/landfill -Ecological impacts -Radioactive substances	27,700,000 gal.	1,343,000,000	1,343,000,000

*Level II costs were assumed to be at least as high as Level I costs when there was insufficient information available to estimate Level II costs.

**These radioactive sites are being studied by the Department of Energy. Published reports on these sites are available. As indicated in the next section, remedial costs for these sites were not considered in the extrapolation process.

B. Cost Extrapolation

It was found that two of the 24 selected cases (8%) could be resolved without incurring cleanup costs. It is probable that a portion of the total population of cases identified as potentially significant hazardous waste problems will be found, upon investigation, to not, in fact, pose problems. The assumption was made that the finding of two "no cost" situations in the 24 case studies was representative of the larger population, which was thus reduced by 8 percent.

In the data base of 232 cases, 19 (or 8%) involved radioactive wastes. Three of the 24 case studies involve radioactive waste problems. These will apparently entail cleanup expenditures substantially larger than the range of costs associated with the other cases. (also, two of the three are government-owned). These costs were thus excluded from the average cost per site calculated for the remaining cases and the larger population of problem sites was reduced by an additional 8%.

Average cost for Level I treatment (exclusive of "no cost" and rad-waste sites) is 3.6 million per site. The average for Level II treatment is \$25.9 million per site. These figures approximate the cost estimate range in the data base of 51 sites (\$5.3 to \$18.4 million per site). Estimates of the prevalence of potential hazardous waste problems show a significant range. While some problems may develop at a large percentage of hazardous waste sites, it seems unlikely that all such problems would be deemed imminent hazards. Thus, for the purpose of this study, the more conservative ("4% rule") estimates were applied.

The first assessment of financial viability of sites (pages 28, 29, and 37 in an earlier version of this report) grouped the government owned sites with the financially viable private sites resulting in a total of 50% of financially viable sites. Consequently, a maximum cleanup figure of \$44.2 billion was derived (i.e., \$22.1 billion Federally funded and \$22.1 billion privately funded). Upon further deliberation, it was determined that this conclusion could be misleading, and it was decided to refine the calculations by considering the government owned sites separately without making a judgment about viability. In the analysis below, sites are reallocated into three categories: private viable; private non-viable; and government (i.e., publicly) owned.

Of the 232 sites for which information was available, 19 are radioactive waste disposal sites requiring enormous expenditures for cleanup. These were deleted from calculations in order to keep the cost figures representative. Of the remaining 213 sites, 190 or 89.2% are private sites.

Twenty-five of the original 232 sites are publicly owned, but 2 are radioactive waste sites and are excluded, leaving 23 out of 213, or 10.8% public non-radioactive waste disposal sites.

Of the 80 sites discussed earlier in the report, 77 are non-radioactive waste disposal sites. We have information concerning financial viability on the private sites, of which there are 54. We do not consider the question of viability of the 23 public sites. In Table 10 the cost of cleanup of these sites is listed separately.

Of the 54 private sites with financial viability data, 15 or 27.8% are considered viable and 39, or 72.2% are non-viable. These percentages give a best estimate of financial status among the small number of private sites about which we have this information.

From our population of 213 sites, we have derived the best estimate of the proportion of sites which are private (89.2%) versus public (10.8%). From the 54 sites with data on financial viability, we have derived the best estimate of the proportion of viable and non-viable private sites. To produce a more refined estimate of the number of private sites which are either financially viable or non-viable, the calculations are as follows:

Of the 89.2% of sites which are private, 27.8% are viable. Therefore, $89.2\% \times 27.8\%$ or 24.8% are viable private sites. This is used to calculate the number of viable private sites in Table 10.

Similarly, of the 89.2% private sites, 72.2% are non-viable. Therefore, $89.2\% \times 72.2\%$ or 64.4% of the total population of sites can be considered non-viable private sites.

The proportion of public sites remains at 10.8% and no judgment on viability is made.

Table 10 shows the extrapolation of the number of sites in each category and for the two estimates of the number of sites nationally. The associated cleanup costs for Level I and Level II remedies are also calculated. It should be noted that Level I and Level II cost estimates are not additive, but represent two distinct types of approaches. Each approach includes necessary elements for either preventing the problem from worsening (Level I) or ultimate and complete remedy (Level II). (Note that calculations have been rounded to the nearest significant number.)

Costs for cleanup of the publicly-owned sites and the privately-owned non-viable sites could be funded through special public funds, Federally appropriated funds, State/local funds, or from a combination of all three.

TABLE 10

Costs for Private Viable, Private
Non-Viable, and Public Sites

<u>Assumptions</u>	<u>EPA Estimate 1204 Sites</u>	<u>Alternate Estimate 2027 Sites</u>
<u>Facilities Excluded</u>		
8% radioactive waste sites		
8% no-cost sites	- <u>193</u>	- <u>324</u>
<u>Population of Interest</u>	1011	1703
(a) number of privately owned financially viable sites (24.8%)	251	422
(b) number of privately owned financially non-viable sites (64.4%)	651	1097
(c) number of publicly owned sites (10.8%)	109	184
<u>Cost of Level I Remedy</u>		
(average cost \$3.6 million per site)		
(a) privately-owned/ financially viable	\$0.9 billion	\$1.5 billion
(b) privately-owned/ financially non-viable	2.3 billion	3.9 billion
(c) publicly-owned	<u>0.4 billion</u>	<u>0.7 billion</u>
Total Level I Costs	\$3.6 billion	\$6.1 billion
<u>Cost of Level II Remedy</u>		
(average cost \$25.9 million per site)		
(a) privately-owned/ financially viable	\$ 6.5 billion	\$10.9 billion
(b) privately-owned/ financially non-viable	16.9 billion	28.4 billion
(c) publicly-owned	<u>2.8 billion</u>	<u>4.8 billion</u>
Total Level II Costs	\$26.2 billion	\$44.1 billion

APPENDIX A

2 1978

Information Needed on Disposal Sites Where Hazardous Waste Threatens Public Health

FROM:

Thomas C. J. [Signature]
Assistant Administrator for Water and Waste Management (WH-556)

TO: Regional Administrators, EPA
Regions I-X

The Office of Management and Budget is concerned about the increasing pressure on the Federal Government to provide funding for cleanup of environmental incidents involving prior disposal or storage of hazardous chemicals and substances. The most recent example is the situation at the Love Canal dump site in Niagara Falls, New York. OMB has established a task force to assess the potential magnitude of such incidents and to develop and assess various options for Federal policy respective to such incidents. OMB has asked EPA to collect information to assist the efforts of the task force and to participate on the task force. In addition, it is very probable that the Congress will want to address this issue in oversight hearings next year and will expect and request EPA to supply substantive information on environmental incidents, both recent and potential. This memorandum is to ask your assistance in gathering information for these two purposes. This request was discussed with your Solid Waste Branch Chiefs in a recent meeting at headquarters on September 14.

In brief, the OMB task force would like to obtain four types of information:

1. a rough estimate of the total number of landfill, storage and other sites that may contain hazardous wastes in any quantity which now or potentially could cause adverse impact on public health or the environment,
2. a rough estimate of the number of these sites that may contain significant quantities of hazardous wastes which could cause significant imminent hazard to public health (this is a subset of above estimate)
3. an inventory and description of those sites for which EPA has information in its files (this is a further subset of the above estimates) and
4. an estimate of the costs of (a) assessing the public health and environmental hazard, (b) engineering studies to determine remedial measures and (c) remedial measures for a dozen or more sites which typify various types of incidents.

It is fully recognized that the estimates for Items 1 and 2 must and can only be "best professional estimates." It is not expected that EPA make any effort to "discover" sites (through field visits, substantial file searches or other means) for which we do not currently have information. Rather, it is expected that EPA make estimates based on knowledge about present and past industrial activity and present and past disposal practices in each Region. It is not required that you involve the States, but, if you can consult with and obtain information from your States without causing undo burden, such State participation would be welcomed.

The purpose of Item 3 is to obtain a better understanding of various sizes and types of incidents that might be expected in the total universe. In a sense, this inventory will be treated as a "representative sample" of the universe. The attachment provides the format and instructions for supplying this inventory and descriptions. It is expected that this information will derive only from your current regional files. However, if you can readily and conveniently solicit additional information and help from the States, we encourage this. It is recognized that the development of this inventory will add national visibility to the incidents identified therein because the inventory will be shared with the Congress and will probably be requested by and be made available to the public. Because of this, incidents included in the inventory should be situations for which you have more than circumstantial information, the public (at least locally) is already aware, and publicly accessible information is already on file.

We intend to use an experienced contractor to carry out Item 4. We will select a dozen or more incidents from the inventory you submit under Item 3 and have the contractor develop the three cost estimates delineated above. For most, if not all, of these selected incidents, the contractor will need to visit your office and, in some cases, make visits to the State offices and/or the site. In all cases, the contractor will work with, and through, your Solid Waste Branch Chiefs and will not make visits without your approval and arrangements.

I would like you to supply the information described in Item 1, 2 and 3 to Gary Dietrich, Associate Deputy Assistant Administrator for Solid Waste, by October 15.

Attachments

Instructions and Format for
Preparing an Inventory and Description
of Disposal Sites Where Hazardous Waste
Threatens Public Health

Purpose: The purpose is to inventory and describe known hazardous waste storage or disposal situations which pose a current or potential hazard to public health. This information will be used by EPA to (1) describe types and variety of the imminent hazard situations currently faced by State and local governments and (2) when combined with representative cost information, to assess the fiscal magnitude of these situations for the purposes of formulating Federal policy for dealing with these situations. This information will be shared with CMB and Congressional oversight and legislative committees. Although there are no plans to publicly release this information, it will probably be made public through requests by Congressional committees and others.

Definitions: Criteria for the types of situations to be inventoried and described are:

- (1) known situations for which information is available and on file in the Regional Office. It need not cover situations for which all or most information must be obtained from the States, local agencies or others or for which field inspections must be made to "discover" and describe the situation. There definitely is no requirement to go out and "discover" hazardous situations, nor is it expected to inventory situations for which only unconfirmed information is available.
- (2) hazardous waste storage and/or disposal situations involving hazardous chemicals or radioactive wastes. Situations involving methane gas or leachate problems from typical municipal landfills or disposal sites should not be covered unless the situation is dominated by hazardous chemicals or radioactive wastes disposed with the municipal wastes. Both abandoned and existing sites should be included irrespective of whether there is an apparent responsible party that could be tasked with the responsibility of correcting the problem. (Quite often the responsible party "evaporates" by declaration of bankruptcy or other legal means when the cost of correction is found to be high.)
- (3) situations that pose an existing or potential imminent hazard to public health through groundwater contamination, surface water discharges including potential spills, air emission and/or radiation emissions.

- (4) situations that can be sufficiently described, pursuant to the following format, using available information.

Timeline: The complete inventory and descriptions must be submitted to Gary W. Dietrich, Associate Deputy Assistant Administrator for Solid Waste, by October 23, 1978.

Format: For each situation, a two-to-five page description should be submitted. The attached format is suggested. However, if it is too confining to enable a good exposition of information, a free-form narrative, covering the same points, may be used.

Format for Inventory of
Disposal Sites Where Hazardous Waste
Threatens Public Health

Name:

Location: (by city, town or county and state)

Ownership: (of site)

Operator: (of site)

Date Established: (or approximate years of operation)

Status: (active or abandoned or in receivership)

Type of Business: (treatment, storage, disposal combination)

Financial: (capacity of owner or operator to remedy the problem)

Waste Handling: (e.g., incineration, landfill, deepwell, landfarm; midnight dumping; transport; storage (warehouse, field) drums, tanks (size, condition, fixation)

Type of Hazardous Waste Involved: (e.g., PCB wastes, organic solvents, pesticide wastes)

Size of Business: (e.g., volume and service area; capacity and size of lagoons and storage area; number of drums)

Condition of Facility: (e.g., housekeeping, leaking drums, imminent hazard, size of contaminated area)

Physical Factors: (e.g., hydrology-geology of area, climate, amount of precipitation, proximity to water bodies, soil types, permeability, depth to bedrock, location on flood plain or wetlands, proximity to residents, number of monitoring wells)

History and Dates of Incidents: (e.g., permit violations, persons injured, residents complaints, epidemiologic data, well contamination, air pollution environmental damage, fires, explosions, breached lagoons)

Action Taken to Date: Federal, State, local remedial action taken and with what result.

Cost: Federal, State local cost incurred or estimates of cost for assessment of the problem, engineering a remedy, carrying out a remedy.

APPENDIX B

ACCUMULATION OF IMPORTANT ACTIVE AND INACTIVE HW SITES

Assumption 1: Sites remain active for (i.e. have a capacity of) 10 years.

Result: A complete turnover of active sites every 10 years.

Assumption 2: Sites upon closure (or abandonment) remain a potential hazard for 40 years.

Result: Every 10 years, 25% of the sites on last decades inactive list will be dropped.

Assumption 3: Number of generators and associated active HW sites 'n' decades ago will = $(.80 - n(.05))$ x the present # of sites.

Result:

# sites in 1970-80	(given from existing data)	=	19,365
# sites in 1960-70	= $(.80 - (.05))$ x 19,365	=	14,524
# sites in 1950-60	= $(.80 - 2(.05))$ x 14,524	=	10,167
# sites in 1940-50	= $(.80 - 3(.05))$ x 10,167	=	6,608
# sites in 1930-40	= $(.80 - 4(.05))$ x 6,608	=	3,967

Assumption 4: Number of sites on accumulated site list = active sites and inactive sites $\leq$ 40 years old. = 19,365 + 14,524 + 10,167 + 6,608 = 50,664.

NOTE: 1930 - 40 active sites were not included as they were $\geq$ 40 years old.

Assumption 5: Number of sites that pose environmental threat.

Lower Bound: EPA Region's Estimates $\rightarrow$ "4% Rule" = 1204 sites.

Upper Bound: # Sites on accumulated site list x % sites in "environmentally sensitive areas" x % sites using inadequate disposal methods =
potential sites x $(.75 \times .90)$ =
 $50,664 \times .68 = 34,452$

Full Range: 1204 - 34,452 sites.

APPENDIX C

SUMMARY: NUMBER OF INCIDENTS

FACILITY TYPE	WASTE TYPES					Total
	Pesticides and Highly Toxic Organics	Other Organics	Inorganics	Radio- active Substances	Explosives & Flammables	
<u>PROBLEM TYPE:</u>						
<u>EXPLOSION</u>						
Above ground storage/disposal		1				1
Uncovered ponds, lagoons, below grade						
Covered pits/ landfills, below grade		1	1			2
Underground injection						
Direct dumping into surface water						
Natural impoundments						
TOTAL		2	1			3

PROBLEM TYPE:
FIRE

Above ground storage/disposal	1	5	1			7
Uncovered ponds, lagoons, below grade			1			1
Covered pits/ landfills, below grade		2	2			4
Underground injection						
Direct dumping into surface water						
Natural impoundments						
TOTAL	1	7	4			12

(continued)

FACILITY TYPE	WASTE TYPES					Total
	Pesticides and Highly Toxic Organics	Other Organics	Inorganics	Radio- active Substances	Explosives & Flammables	
PROBLEM TYPE:						
AIR POLLUTION						
Above ground storage/disposal	3	4		1		8
Uncovered ponds, lagoons, below grade		2				2
Covered pits/ landfills, below grade	2	1				3
Underground injection						
Direct dumping into surface water						
Natural impoundments						
TOTAL	5	7		1		13

PROBLEM TYPE:						
GROUND WATER CONTAMINATION— POTABLE SUPPLY						
Above ground storage/disposal	9	14	20	1		44
Uncovered ponds, lagoons, below grade	3	17	20	2	1	43
Covered pits/ landfills, below grade	7	14	11	3		35
Underground injection	3	3	1			7
Direct dumping into surface water		2				2
Natural impoundments						
TOTAL	22	50	52	6	1	131

(continued)

SUMMARY OF THE RECORDS OF THE SOLID WASTE ADMINISTRATION
REGARDING CHEMICAL CONTROL CORPORATION

The records of the Solid Waste Administration (hereinafter referred to as SWA) show that in February, 1974, William Carracino, President of Chemical Control Corporation (hereinafter referred to as "CCC"), filed a registration statement for the operation of a solid waste facility for the treatment, processing and recovery of pesticides, hazardous wastes, chemical wastes, and bulk semi-liquids. This statement was filed with the Bureau of Solid Waste Management of the Division of Water Resources of the Department of Environmental Protection (hereinafter referred to as the DEP). (As of October, 1975, the Bureau of Solid Waste Management was transferred to the newly created SWA to which all records and personnel of the Bureau was transferred). Staff members of the SWA who were employed in 1974 indicate that "CCC" operated prior to 1974 and was subject to inspections by the City of Elizabeth.

Since 1974, the "CCC" facility has operated and has been subject to inspections by the SWA. The incinerator and feeding tanks at the "CCC" site have air pollution permits and are inspected by the Division of Environmental Quality's Bureau of Air Pollution Control. The site has been inspected on several occasions by the Office of Hazardous Substances Control. Between 1974 and mid-1977, the SWA inspection reports generally show no violations of SWA regulations. In the latter part of 1977, both the SWA and the City of Elizabeth became aware of increasing operational and storage problems at the "CCC" site. This storage problem had slowly accelerated as this facility accepted more drums than the incinerator could handle. For example, in the spring of 1977, "CCC" contracted to take for disposal approximately 1,443 drums found illegally stored on an abandoned pier within Jersey City. At least three-quarters of those drums are still on site, and "CCC" has not been able to dispose of these.

On September 22, 1977, the President of "CCC", William Carracino, was indicted and later convicted of illegally disposing of hazardous waste on certain vacant non-registered sites (not the "CCC" site). As a result of Mr. Carracino's indictment, the parent company, Northeast Pollution Control Company, took over the operation of the company, and Mr. Carracino is no longer involved with "CCC".

The SWA, in the latter part of 1977, initiated discussions with Mr. Michael Colleton (former Secretary-Treasurer of Northeast Pollution Control Company), who had taken over the management of "CCC" regarding the clean-up of the facility, including the reduction of the chemical-hazardous waste drum inventory. Mr. Colleton assured the SWA that the parent company was not responsible for Mr. Carracino's activities and that they were not aware of the immediate problem that existed on the "CCC" site until they took over control. Mr. Colleton assured the SWA that they would immediately begin to reduce the inventory and clean up the site. SWA tried to work with "CCC" and to give the company time within which to correct the problems at the site. Representatives of "CCC" expressed a determination to clean up so that they could continue in business. In giving "CCC" this opportunity, SWA recognized the fact if it ordered the site closed the company would probably go into bankruptcy and the site would not be cleaned up nor would the drums be removed. If this were to occur, there would remain a problem in finding adequate sources of money for total site clean-up. After several months, SWA concluded that there was no discernable improvement on the site and issued an administrative order on March 21, 1978 requiring the necessary clean-up and reduction of the number of drums on the site. A copy of this Administrative Order is attached.

Inspections of the "CCC" facility after the Administrative Order was issued indicated an initial compliance with the order. However,

after a number of months has passed, it became apparent that Mr. Colleton's monthly reports to the SWA indicating a progressive reduction of the number of drums were incorrect. Furthermore, the clean-up of the site was not proceeding as required by the Administrative Order, and other problems developed. For example, on June 7, 1978, a trailer labeled "Class B Poison" was parked directly adjacent and partially on the public road in front of the "CCC" facility, and behind that, a second trailer was "leaking" waste into a catch basin. This situation was immediately ordered corrected by the DEP's Office of Hazardous Substances Control; the "CCC" officials complied with the order. Inspection by the SWA in June, 1978 revealed that certain on-site welding activities appeared to be in violation of OSHA requirements; and the matter was referred to that federal agency for follow-up.

It was increasingly apparent that further administrative or legal action would be necessary.

At the suggestion of Dr. Peter W. Preuss, Director of DEP's Toxic Substances Program, the DEP engaged a specialized firm, Hazards Research Corporation, to evaluate the "CCC" site and determine the potential for fire and explosion. The result, both of Mr. Cruice's inspection and the information relating to the non-compliance with the Administrative Order resulted in a request to the Attorney General's office to start legal action to bring "CCC" into compliance. In the preparation of the case, the Attorney General's office discussed the matter with the U.S. Environmental Protection Agency and the U.S. Attorney's office, and were able to use information gathered by the federal agencies in the preparation of the case.

The Attorney General, on January 19, 1979, sought a temporary restraining order from the Superior Court, Chancery Division, Union County. On that date Judge Telemon ordered "CCC" to immediately

to remove 12,000 drums, to cease accepting new waste, to clean up the site and to install additional fire fighting equipment. A copy of this Court Order is attached. The DEP determined that it was prudent to have 24 hour security at the site to control further spillage and to prevent any unauthorized person from entering the site. This security force was comprised of 40 DEP inspectors working swing shift surveillance in addition to their regular assignment. After three weeks, staff surveillance was replaced by a contracted security guard. The need for surveillance was demonstrated when on Sunday, January 14, 1979, at 1:00 a.m. three drums containing reactive waste caught fire, without the quick reporting action of DEP's on-site surveillance team, a major disaster could have occurred. The Elizabeth Fire Department reacted immediately and the fire was rapidly extinguished.

On January 22, 1979, the DEP met with "CCC" to discuss their compliance with the Court Order. It became clear that "CCC" was not going to comply and on March 8, 1979, the DEP, through the Attorney General's office, returned to court to seek a permanent injunction. The court granted the permanent injunction and appointed a Receiver. The Receiver was directed by the Court to use the company's assets to comply with the Court Order of January 19, 1979. A copy of this second court order is attached.

The DEP's representatives met with the Receiver on February 12, 1979 to discuss the "CCC" situation. At his request, the Attorney General's office agreed to obtain bids from various companies for the clean up of the site, including the removal of drums. The Receiver also indicated that he would talk to the principals of "CCC" and ask them to prepare a plan for the disposal of the drums and the clean up. The SBA met with a number of leading companies involved with hazardous

site disposal, visited the "CCC" site with them, and asked them to submit bids. Four bids were received and they were given to the Receiver on March 6, 1979. The Receiver on that date gave the DEP a copy of a program suggested by the principals of "CCC". This proposal was reviewed and found technically unacceptable by the DEP; the Receiver was so notified. The Receiver periodically notified the DEP of the financial constraints under which the "CCC" was operating and concluded that "CCC" could not undertake the clean up with the assets available to him. He asked the DEP for state assistance.

Even before the state initiated the first court action, discussion had taken place as to what the State could do if "CCC" could not clean up the site and remove the drums. In light of "CCC"'s financial status as reported by the Receiver, representatives of the DEP met several times with the Administrator of the New Jersey Spill Compensation Fund. In March, 1979, it was decided that the Fund could be used to remove the leaking drums and spilled materials from the site and to stabilize the site.

DEP's Office of Hazardous Substances Control, the prime DEP group for spill clean-up work, began to negotiate with contractors for this partial clean up of the site. On April 1, 1979, Coastal Services, Inc. initiated the authorized clean-up procedure.

Last week, during this clean-up procedure, significant quantities of highly explosive materials were discovered on the site. The existence of these materials were unknown to the DEP before that time. This material is not reflected on the inventory requested and submitted by "CCC" pursuant to the Administrative Order, on the inventory required and filed by "CCC" pursuant to the January 19, 1979 Court Order, or in any other information DEP has so far examined.

The Office of Hazardous Substances Control, in cooperation with various Federal agencies, is now working out a program for the safe removal of these highly explosive materials.

The City of Elizabeth has ordered a civil emergency in view of the danger associated with moving this highly explosive material and has alerted all persons within a half-mile radius of the site regarding the situation. Other new actions are being undertaken in view of this newly discovered and critical problem.

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOLID WASTE ADMINISTRATION
TRENTON, OREGON

BEATRICE S. TYLUSKI
DIRECTOR

March 21, 1978

Chemical Control Corporation
23 South Front Street
Elizabeth, New Jersey

Gentlemen:

Attached herewith please find an Administrative Order concerning the required clean-up of stored chemical wastes at your facility.

If you have any questions regarding this Order, please contact Mr. Mark McQuerrey of my staff at (609) 982-9230.

Very truly yours,

Beatrice S. Tyluski
Beatrice S. Tyluski
Director
Solid Waste Administration

Enclosure

cc: Lew Gaeta, PUC
John J. Dwyer, City of Elizabeth
Joseph Kazar, Union County Planning Board
Dr. Peter W. Preuss, Special Assistant to the Commissioner
Steven Tashor, Deputy Attorney General
Nathan Edelstein, Deputy Attorney General
H. A. Jateczak, Solid Waste Administration
L. Pereira, Solid Waste Administration
R. Buchanan, Solid Waste Administration
W. Burchstin, Solid Waste Administration
A. Ymiecik, Solid Waste Administration
J. Mark McQuerrey, Solid Waste Administration

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SOLID WASTE ADMINISTRATION
TRENTON, NEW JERSEY

PERMIT NO. 1210001
DIRECTOR

(IN THE MATTER OF DISPOSAL OF)
(CHEMICAL WASTE DRUMS STORED)
(BY CHEMICAL CONTROL CORPORATION))
(AT 23 SOUTH FRONT STREET IN)
(ELIZABETH, NEW JERSEY FILE)
(NO. 20048)

Administrative Order

WHEREAS, Chemical Control Corporation is a chemical waste treatment and processing facility, regulated by the Department of Environmental Protection (DEP);

WHEREAS, Chemical Control Corporation has accumulated and stored approximately 30,000 drums of various chemical wastes at 23 South Front Street in Elizabeth, New Jersey, with the intention of ultimately providing for treatment and/or disposal of said drums;

WHEREAS, pursuant to N.J.S.A. 13:1B-1 et seq., it is the responsibility of the DEP to prevent and eliminate environmental hazards associated with chemical waste collection and disposal;

NOW, THEREFORE, Chemical Control Corporation IS HEREBY ORDERED TO:

- 1) Commence within one week of the date of this Order to eliminate the stored chemical waste drums by a number of approximately 1,200 drums per month;
- 2) Eliminate the entire quantity of stored chemical waste within two years of the date of this Order;
- 3) Submit to the DEP, Solid Waste Administration, by the first of each month, a summary of all wastes and quantities accepted by Chemical Control Corporation and a summary of wastes and quantities treated and/or disposed from those chemical waste drums stored at the facility;

- 4) Accept no new chemical wastes which cannot be disposed within 60 days of receipt of said waste, said disposal being in addition to the provisions of this Order.
- 5) Remove all chemical drums, spilled chemical waste, and/or chemical saturated soils within ten horizontal feet of the top of the bank of the Minnaboth River within four months of the date of this Order.
- 6) Either immediately remove or dispose of those containers of chemical waste contained in and/or spilled from deteriorating or punctured drums that are deteriorated or saturated thereby presenting a possible source of pollution.
- 7) Construct a fence around the entire property utilized for storage or disposal of chemical waste within four months of the date of this Order. Said fencing shall be approved by the Solid Waste Administration prior to installation.

Also, Chemical Control Corporation is HEREBY NOTIFIED that failure to comply with this Administrative Order will subject Chemical Control Corporation to penalties of up to \$3,000 per day, pursuant to N.J.A.C. 13:1E-9, and possible loss of operating authority, pursuant to N.J.A.C. 13:1E-12. This Order becomes effective immediately.


Beatrice S. Tylack, Director
Solid Waste Administration

March 21, 1978

DATE

FILED

JAN 19 1971

HAROLD A. AGNEW

J.S.C.

ATTORNEY AT LAW

1971 JAN 19 30

JOHN J. DEGMAN
ATTORNEY GENERAL OF NEW JERSEY
Attorney for Plaintiff
15 West State Street
Trenton, New Jersey 08625
By: STEVEN A. TASHER
RONALD P. HEKSCH
Deputy Attorneys General
(609) 292-1557

SUPERIOR COURT OF NEW JERSEY
CHANCERY DIVISION, UNION COUNTY
DOCKET NO.

STATE OF NEW JERSEY, DEPARTMENT
OF ENVIRONMENTAL PROTECTION,

Plaintiff,

v.

CHEMICAL CONTROL CORPORATION, a
New Jersey corporation; NORTHEAST
POLLUTION CONTROL CORPORATION, a
foreign corporation; MICHAEL
COLLETON; EUGENE CONLON; JOHN
ALBERT; ROBERT J. DAY and
CHARLES F. DAY,

Defendants.

Civil Action

ORDER TO SHOW CAUSE WITH
TEMPORARY RESTRAINTS

This matter being opened to the Court by John J. Degman,

Attorney General of New Jersey, attorney for plaintiff, Steven A.

Tasher and Ronald P. Heksch, Deputy Attorneys General, appearing,

and the Court having read and considered the Verified Complaint, affidavits and exhibits attached thereto, and it appearing to the Court that the defendants are the owners and operators of a solid waste facility for the treatment, processing and recovery of chemical wastes located at 23 South Front Street, City of Elizabeth, Union County, New Jersey, and that this facility is being operated in violation of N.J.S.A. 13:1E-1 et seq., rules and regulations promulgated by plaintiff pursuant thereto, and an Administrative Order issued by plaintiff pursuant thereto; and it further appearing that said facility is being operated in violation of N.J.S.A. 58:10-23.11 et seq. and N.J.S.A. 23:5-28; and it further appearing that defendants are operating the facility in question in a manner which results in a serious risk of fire and explosion and contamination of the environment and thus constitutes a public and private nuisance; and it further appearing that all of the aforementioned violations threaten the public health, welfare and environment; and it further appearing that irreparable harm will occur unless the injunctive relief requested is granted; and good cause being shown for the making of this order;

IT IS on this 17 day of January 1979,
ORDERED that the defendants Chemical Control Corporation, Northeast Pollution Control Corporation, Michael Colleton, Eugene Conlon, Ed. Albert, Robert J. Day and Charles F. Day, show cause before

the Superior Court of New Jersey, Chancery Division, Union County, at the Court House in Elizabeth, New Jersey, on the 17th day of March, 1979, at 9:00 o'clock in the forenoon, or as soon thereafter as counsel may be heard, why the relief sought in the complaint should not be granted; and

IT IS FURTHER ORDERED that the defendants Chemical Control Corporation, Northeast Pollution Control Corporation, Michael Colleton, Eugene Conlon, John Albert, Robert J. Day and Charles F. Day, and such of their officers, agents, employees and other persons in active concert or participation with said defendants as receive actual notice of this order, cease accepting for disposal and/or storage any further waste material at the Chemical Control facility in Elizabeth, New Jersey; and

IT IS FURTHER ORDERED that the aforementioned defendants, their officers, agents, employees and other persons in active concert or participation with them as receive actual notice of this order, immediately remove from their facility in Elizabeth, New Jersey, in a manner approved by the plaintiff, all leaking and damaged drums containing chemical wastes; and

IT IS FURTHER ORDERED that the aforementioned defendants, their officers, agents, employees and other persons in active concert or participation with them as receive actual notice of this order, immediately eliminate, in a manner approved by the

plaintiff, the direct release of hazardous substances into the waters of the State and remove all such substances heretofore placed in a position where they can flow or run off into said waters. This shall include but is not limited to sealing off the sewer sewer at the facility in question and removal of all drums there within ten (10) feet of the Elizabeth River; and

IT IS FURTHER ORDERED that defendants, their officers, agents, employees and other persons in active concert or participation with them as receive actual notice of this order, shall immediately, in a manner approved by the plaintiff, palletize and stabilize the stacked drums at the Chemical Control facility so as to minimize fire and explosion hazards that presently exist there; and

IT IS FURTHER ORDERED that the aforementioned defendants, their officers, agents, employees and other persons in active concert or participation with them as receive actual notice of this order, shall immediately assemble ^{available} fire-fighting equipment at the facility in question necessary to control, contain and extinguish all fires that occur there; and

IT IS FURTHER ORDERED that the aforementioned defendants, their officers, agents, employees and other persons in active concert or participation with them as receive actual notice of

this order, shall immediately provide the plaintiff with an inventory of all chemical wastes presently stored at the facility in question; and

IT IS FURTHER ORDERED that during the pendency of this litigation employees, agents and representatives of the plaintiff, State of New Jersey, Department of Environmental Protection, shall be permitted to inspect the Chemical Control facility and shall have access to same without having to give the defendants prior notice; and

IT IS FURTHER ORDERED that during the pendency of this litigation employees, agents and representatives of the plaintiff shall have access to the Chemical Control facility for the purpose of taking samples of chemical wastes, soil, air and water at the site; and

IT IS FURTHER ORDERED that defendants shall make available to plaintiff for inspection any and all records, books, journals, manifests, vouchers, bills of lading, etc., related to the operation of the Chemical Control facility; and

IT IS FURTHER ORDERED that no later than three (3) days before the return date hereof defendant shall provide plaintiff with the names and addresses of all owners, shareholders, directors and officers of Chemical Control Corporation and Northeast Pollution Control Corporation and such other person or persons who may have

an interest in the ownership and operation of the Chemical Control Facility; and

IT IS FURTHER ORDERED that defendants shall immediately reduce, in a manner satisfactory to the plaintiff, the amount of drums containing chemical wastes at the Chemical Control Facility by 32,000 drums; and

IT IS FURTHER ORDERED that the aforementioned defendants may move to modify or dissolve the restraints herein on two (2) days' written notice; and

IT IS FURTHER ORDERED that a copy of this Order to Show Cause with Temporary Restraints and the Verified Complaint with affidavits and exhibits annexed thereto be served upon the aforementioned defendants, such service to be made by either ordinary or certified mail, or by personally serving same upon each of the defendants within 5 days of the date hereof. Personal service may be made by a representative of the Office of the Attorney General or by a representative of the plaintiff, Department of Environmental Protection; and

IT IS FURTHER ORDERED that the defendants shall not later than three (3) days before the return day hereof, serve and file either an answer, answering affidavits or notice of motion returnable on the return date hereof, in default of which this action may proceed ex parte as provided by R. 4:67-4.

AND IT IS FURTHER ORDERED that the defendant shall
serve and file an answer, answering affidavit or motion,
returnable on the return day at least 5 days before the return
day.

AND IT IS FURTHER ORDERED that all parties file and
serve briefs at least 5 days before the return day. In default
thereof, the matter may proceed ex parte.

Harold A. Agrestian
HAROLD A. AGRESTIAN, J.S.C.

STATE OF NEW JERSEY
DEPARTMENT OF LAW AND PUBLIC SAFETY
DIVISION OF LAW

MAR 12 1979

MEMORANDUM

TO: Paul Arbesman, Asst. Comm'r, DEP
Beatrice Tylutki, Director, SLA

FROM: Steven A. Tasher, DAG

SUBJECT: State v. Chemical Control Corp.
Docket No. C-2016-78

DATE: March 8, 1979

Enclosed is a copy of the Order Granting Preventative and Remedial Injunctive Relief and Appointing Receiver in the above matter.

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RECEIVED

MAR 14 1978

HAROLD A. JORDAN

J. S. C.

ORIGINAL TO TRINITY

JOHN J. DEGNAN

Attorney General of New Jersey

Attorney for Plaintiff

36 West State Street

Trinnton, New Jersey 08625

By: STEVEN A. TASHER

Deputy Attorney General

(609) 292-1546

SUPERIOR COURT OF NEW JERSEY
CHANCERY DIVISION, UNION COUNTY
DOCKET NO. C-2016-78

STATE OF NEW JERSEY, DEPARTMENT
OF ENVIRONMENTAL PROTECTION,

Plaintiff,

vs.

CHEMICAL CONTROL CORPORATION, a
New Jersey corporation, et al,

Defendants.)

Civil Action

ORDER GRANTING PREVENTATIVE
AND REMEDIAL INJUNCTIVE RELIEF
AND APPOINTING RECEIVER

This matter having been presented to the Court by John J. Dagnan, Attorney General of New Jersey, by Steven A. Tasher, Deputy Attorney General, attorney for plaintiff New Jersey Department of Environmental Protection (NJDEP), and the Court having considered the arguments of counsel as well as having read the Verified Complaint, Briefs, Affidavits and Exhibits provided by the State in support of

precautionary and remedial injunctive relief, and the relief and injunctions in opposition thereto filed by the defendants, and it appearing to the Court that the defendants are the owners and operators of a solid waste facility for the treatment, processing, and recovery of chemical wastes located at 25 South Front Street, City of Elizabeth, Union County, New Jersey, hereinafter referred to as the Chemical Control Facility, and that this Facility is being operated in violation of N.J.S.A. 13:1E-1 et seq. and N.J.A.C. 7:26-1 et seq., such violations including but not limited to the operation of said Facility without having obtained approved design engineering plans from the NJDEP, the storage of material in a manner which constitutes a serious threat to the public health and welfare, and that they have failed to comply with an Administrative Order issued by plaintiff pursuant thereto on March 21, 1978 and the order of this Court dated January 19, 1979; and it further appearing that said Facility is being operated in violation of N.J.S.A. 58:10-23.11 et seq. and N.J.S.A. 23:5-28, which violations include but are not limited to the discharge and release of poisonous, deleterious and hazardous substances into the waters of this State and/or onto lands from which said hazardous substances might flow, and the discharge and release of poisonous, deleterious and

harmful substances into the waters of this State; that said drums containing toxic and flammable wastes are stacked haphazardly throughout the entire site, with such stacks including as many as five drums stacked upon one another and not having been segregated by chemical waste type, or by source, or by space and distance, several of said drums are disintegrating and deteriorating resulting in the discharge of wastes onto the grounds of said Facility, said drums containing toxic flammable chemicals are not palletized or stabilized so as to ensure their proper, environmentally sound maintenance, handling and storage, and said Facility being located within several hundred feet of residential areas in the City of Elizabeth and in close proximity to bulk storage facilities which handle large amounts of gasoline, liquid natural gas and other highly flammable substances; and it further appearing that all of the aforementioned violations constitute a serious threat to the public health and welfare caused by the defendants in violation of the aforesaid laws; and it further appearing that irreparable harm will occur unless the injunctive relief requested is granted; and good cause being shown for the making of this order;

IT IS, on this 7th day of March, 1979,

ORDERED that John H. Boyle, Esquire, is hereby appointed as Receiver of the Chemical Control Facility for the purpose of supervision of said facility for the purpose of effecting a complete cleanup of the instant facility, remedying all violations of law set forth herein and bringing said facility into compliance with the Administrative Order promulgated by the Department of Environmental Protection on March 21, 1978 and the Order to Show Cause with Temporary Restraints imposed by this Court on January 19, 1979; and

IT IS FURTHER ORDERED that the defendants, their agents and employees are immediately enjoined from interfering with the actions of said Receiver and from entering onto the property of the Facility at any time without the approval of the Receiver and from operating the Facility in any manner; and

IT IS FURTHER ORDERED that all assets of any kind of the Chemical Control Corporation are to be immediately turned over or otherwise transferred to the possession and control of the said Receiver and that no disposition, transfer, release or other disposal of any of said assets shall be made subsequent to Thursday, February 8, 1979 at 12:00 noon, except as directed and approved by the Receiver; and

IT IS FURTHER ORDERED that all books, records, journals, manifests, vouchers and bills of lading pertaining to the operation of the defendants' Facility shall be immediately turned over to said Receiver; and

IT IS FURTHER ORDERED that full cooperation is to be immediately extended to said Receiver by the defendants as well as by the NJDEP in furtherance of the mandate of this Court; and

IT IS FURTHER ORDERED that the Receiver in this matter shall provide the Court with periodic progress reports pertaining to the performance of the activities set forth herein; and

IT IS FURTHER ORDERED that upon completion of the instant cleanup program, said Receiver will submit a final report to the Court; and

IT IS FURTHER ORDERED that the defendant Chemical Control Corporation will pay for all costs associated with the performance of the activities set forth in this Order; and

7/11 IT IS FURTHER ORDERED that ^{*at this time*} ~~plaintiffs~~ may move before the Court on short notice for any additional required relief.

Harold A. Acherman
HAROLD A. ACHERMAN; J.S.C.
— J. S. C.