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STATEMENT OF
HENRY ESCHWEGE, DIRECTOR
COMMUNITY AND ECONOMIC DEVELOPMENT DIVISION

BEFORE THE
SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS
OF THE
HOUSE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

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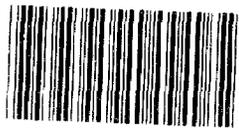
ON

ALTERNATIVES FOR THE DISPOSAL AND CLEANUP
OF HAZARDOUS WASTE

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

WE WELCOME YOUR INVITATION TO BE HERE TODAY TO DISCUSS
OUR ONGOING REVIEW OF ENVIRONMENTAL PROTECTION AGENCY (EPA) 24
PROGRAMS FOR THE DISPOSAL AND CLEANUP OF HAZARDOUS WASTE.
A SECOND REVIEW DEALING WITH THE TESTING NECESSARY TO
ESTABLISH LIABILITY FOR HAZARDS AT DISPOSAL SITES IS CURRENTLY
UNDERWAY AND WE EXPECT TO BRIEF YOU ON THIS REVIEW IN
SEPTEMBER 1980.

WE WILL DISCUSS HAZARDOUS WASTE DISPOSAL BY (1) LAND,
(2) INJECTION INTO DEEP WELLS, AND (3) HIGH TEMPERATURE
BURNING. ALTHOUGH OUR DISCUSSION TODAY IS DIRECTED TO
THESE THREE METHODS, OTHER ALTERNATIVES SHORT OF DISPOSAL
ARE AVAILABLE TO HANDLE THE HAZARDOUS WASTE PROBLEM. WE
WILL ALSO DISCUSS THE CONCEPT OF REGIONALIZATION
AS A WAY TO ESTABLISH DISPOSAL FACILITIES; THE NEED FOR



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ADDITIONAL RESEARCH AND DEVELOPMENT EFFORTS; THE STATUS OF CLEANUP OF CLOSED AND ABANDONED SITES; AND FINALLY, WE WILL TOUCH ON THE HAZARDOUS WASTE REGULATIONS RELEASED BY EPA LAST MAY.

BECAUSE OUR REVIEW IS STILL UNDERWAY, TOP EPA MANAGEMENT HAS NOT YET BEEN GIVEN AN OPPORTUNITY TO COMMENT ON THE RESULTS OF OUR WORK.

EACH OF THE AVAILABLE METHODS OF DISPOSAL HAS MERIT. THEY ARE ALL NEEDED TO COPE WITH THE VOLUME AND TYPES OF HAZARDOUS SUBSTANCES REQUIRING DISPOSAL. HOWEVER, NONE OF THE METHODS IS 100 PERCENT SAFE. EACH REQUIRES EFFECTIVE CONTROL AND ENFORCEMENT PROCEDURES. SUBSTANTIALLY MORE ANALYSIS IS ALSO NEEDED AS TO THEIR APPLICATION ON AN INDIVIDUAL SITE BASIS.

LAND DISPOSAL

LAND DISPOSAL IS A METHOD OF PLACING WASTE SUBSTANCES IN OR ON THE LAND, FOR PURPOSES OF GETTING RID OF THEM OR LONG TERM STORAGE. IT IS THE MOST COMMONLY USED METHOD. FOR CERTAIN STATES, SUCH AS MARYLAND AND PENNSYLVANIA, IT IS THE PREDOMINANT METHOD IN USE.

EPA HAS ESTIMATED THAT NATIONALLY, THERE ARE ABOUT 94,000 LANDFILLS AND 173,000 SURFACE IMPOUNDMENTS--PITS, PONDS AND LAGOONS--USED FOR THE DISPOSAL OF WASTES.

AT THE THREE EPA REGIONAL OFFICES AND SIX STATES WE VISITED, HOWEVER, ONLY LIMITED DATA ON THE EXTENT THAT LAND DISPOSAL WAS BEING USED FOR VARIOUS HAZARDOUS SUBSTANCES, AND THE LOCATIONS OF DISPOSAL SITES, HAD BEEN DEVELOPED. TO DATE, DETAILED ESTIMATES OF THE TOTAL NUMBER OF CLOSED AND ABANDONED SITES HAD ALSO NOT BEEN MADE.

FOR THE IMMEDIATE FUTURE, LAND DISPOSAL WILL KEEP ITS APPEAL LARGELY BECAUSE IT IS THE LEAST EXPENSIVE METHOD OF DISPOSAL. YET WITH TIME WE WILL RUN OUT OF LAND ON WHICH TO DEVELOP SITES. DEPENDING ON LOCATION AND THE SUBSTANCES DISPOSED OF, LAND DISPOSAL SITES CAN EVENTUALLY LEACH AND CONTAMINATE GROUNDWATER. ITS ELIMINATION AS A DISPOSAL METHOD IS NOT PRACTICAL, HOWEVER, SINCE LAND DISPOSAL WILL BE REQUIRED TO DISPOSE OF SOLIDS THAT OTHERWISE CANNOT BE DISPOSED OF, AS IN THE CASE OF RESIDUES FROM INCINERATION AND SOLIDS THAT CANNOT BE INJECTED INTO DEEP WELLS.

WHERE GROUNDWATER IS USED OR PLANNED FOR USE AS A DRINKING WATER SOURCE, THE LAND DISPOSAL OF HAZARDOUS SUBSTANCES SHOULD BE VERY CLOSELY CONTROLLED AND WHERE POSSIBLE SUBSTANTIALLY REDUCED. UNTIL A GREATER CAPACITY FOR OTHER DISPOSAL METHODS IS DEVELOPED FOR THE COUNTRY, LAND DISPOSAL WILL REMAIN PREDOMINANT. AFTER MORE SPECIFIC CONTROLS OVER LAND DISPOSAL OPERATIONS ARE PUT IN PLACE BY EPA, RESULTING IN INCREASED COSTS, ITS USE SHOULD DECLINE.

ONE OTHER METHOD OF LAND DISPOSAL USED IS LAND TREATMENT OR LANDFARMING. IT INVOLVES THE PLACEMENT OF SUBSTANCES ON THE LAND AND PERIODICALLY PLOWING THEM UNDER UNTIL THEY NATURALLY DEGRADE. IT HAS ONLY LIMITED APPLICATION BECAUSE IT REQUIRES LARGE LAND AREAS, AND IS LIMITED TO USE IN AREAS WHERE TEMPERATURES ARE RELATIVELY MILD, AND DO NOT GET TOO LOW FOR EXTENDED PERIODS. IT HAS GENERAL APPLICATION TO THE LESS HAZARDOUS, BIOLOGICALLY DEGRADABLE SUBSTANCES. ONE OF ITS CURRENT USES IS IN THE DISPOSAL OF OIL SLUDGE RESIDUES.

DEEP WELL INJECTION

DEEP WELL DISPOSAL IS THE SUBSURFACE INJECTION OF LIQUID WASTES INTO PERMEABLE ROCK OR OTHER GEOLOGIC FORMATIONS BELOW POTABLE GROUNDWATER SUPPLIES OR OTHER NATURAL RESOURCES AT DEPTHS RANGING FROM LESS THAN 1000 TO OVER 8000 FEET. SUCH UNDERGROUND AREAS RECEIVING WASTES SHOULD BE ISOLATED BOTH FROM ABOVE AND BELOW BY FORMATIONS THAT ARE IMPERMEABLE, IN ORDER THAT THE WASTES INJECTED ARE PERMANENTLY CONFINED.

A SUBSTANTIAL DRILLING TECHNOLOGY HAS BEEN DEVELOPED AND IS AVAILABLE FOR APPLICATION TO DEEP WELL DISPOSAL. IT WAS FIRST PUT INTO USE IN TEXAS IN THE LATE 1930'S. DEEP WELL DISPOSAL IS LIMITED TO FLUID WASTES AND HAS BEEN USED EFFECTIVELY IN TEXAS AND LOUISIANA WHERE THROUGH DECEMBER 1978, OVER 73 BILLION GALLONS OF WASTES HAVE BEEN DISPOSED OF IN DEEP WELLS.

THERE IS LITTLE EVIDENCE OF ANY ENVIRONMENTAL PROBLEM RESULTING FROM SUCH DISPOSAL. IN A FEW INSTANCES THERE WAS SOME GROUNDWATER CONTAMINATION, GROUND TREMORS, AND BLOWOUTS. THE PROBLEM CASES WERE EXPLAINED AS EXAMPLES WHERE PROPER TECHNOLOGY AND SAFETY EQUIPMENT WERE NOT USED, INCLUDING THE USE OF INCORRECT DRILLING PROCEDURES AND WASTE INJECTION RATES. GROUNDWATER CONTAMINATION RESULTED WHEN WELL TUBING USED WAS NOT COMPATIBLE WITH THE SUBSTANCES THAT WERE INJECTED, OR WHEN THERE WAS IMPROPER PACKING OF THE WELL IN PREPARATION FOR ITS USE.

WASTES CAN BE RECLAIMED OR RETURNED TO THE SURFACE. ALTHOUGH GENERALLY THEY WOULD BE PUMPED, DEPENDING ON THE SUBSTANCE, A SUBSTANTIAL AMOUNT OF THE WASTE VOLUME INJECTED COULD BE RECLAIMED BY NATURAL PRESSURES WITHOUT PUMPING. ONCE A WELL HAS BEEN CLOSED, IT CAN BE MADE PERMANENTLY SECURE BY PROPER PLUGGING WITH CONCRETE.

THE INJECTION OF HAZARDOUS WASTES INTO DEEP WELLS HAS APPLICATION IN ONLY GEOLOGICALLY SELECTIVE AREAS WHERE CONDITIONS BELOW THE SURFACE ARE SUCH THAT THE WASTES INJECTED CANNOT MIGRATE SO AS TO POLLUTE SURFACE OR GROUNDWATER AND RECLAIMABLE MINERALS. IT REQUIRES A STRONG COMMITMENT BY GOVERNMENT AND INDUSTRY TO (1) ESTABLISH STRICT CONTROLS OVER THE DRILLING TECHNOLOGY USED, (2) MONITOR THE WELL IN THE DRILLING AND OPERATING PHASES, AND (3) LIMIT THE TYPES OF SUBSTANCES THAT CAN BE INJECTED. SUBSTANTIAL GEOLOGICAL INFORMATION IS NEEDED SO THAT ONLY AREAS WHERE WASTES CAN

BE SECURELY HELD ARE IDENTIFIED FOR SITE DEVELOPMENT. IN ADDITION TO THE TEXAS-LOUISIANA AREA, OTHER AREAS POSSIBLY SUITABLE FOR DEEP WELL HAZARDOUS WASTE DISPOSAL INCLUDE THE SALINA BASIN AREA IN KANSAS; THE WILLISTON BASIN IN NORTH DAKOTA; AND SMALL BASINS ALONG THE ATLANTIC COASTAL PLAIN.

HIGH TEMPERATURE BURNING OF HAZARDOUS WASTES

THE BURNING OF HAZARDOUS WASTES IN INCINERATORS, AT TEMPERATURES GENERALLY IN EXCESS OF 1000 DEGREES CENTIGRADE WITH A TWO SECOND RETENTION PERIOD IN THE INCINERATOR--HIGH TEMPERATURE BURNING--MAY BE ANOTHER SOLUTION TO THE HAZARDOUS WASTE DISPOSAL PROBLEM. THE PROCESS CAN PERMANENTLY REDUCE LARGE VOLUMES OF HAZARDOUS SUBSTANCES TO NON-TOXIC GASEOUS EMISSIONS AND SMALL AMOUNTS OF ASH AND OTHER RESIDUES.

INDUSTRY SPOKEMEN BELIEVE IT IS BEST APPLIED IN THE DESTRUCTION OF ORGANIC SUBSTANCES IN CONJUNCTION WITH OTHER DISPOSAL METHODS, AND SHOULD BE PART OF A COMBINED DISPOSAL SYSTEM WHICH MAY INCLUDE THE LAND DISPOSAL OF WASTES. EXAMPLES WHERE HIGH TEMPERATURE INCINERATORS HAVE BEEN APPLIED INCLUDE OCEAN INCINERATION AND THE BURNING OF HAZARDOUS WASTES IN FOSSIL FUEL ELECTRIC POWER GENERATING PLANTS.

A SUBSTANTIAL DRAWBACK WITH HIGH TEMPERATURE INCINERATION IS THAT IT IS MUCH MORE EXPENSIVE THAN DEEP WELL INJECTION OR LANDFILL. WHERE THE WASTE STREAM TO WHICH THE PROCESS IS APPLIED INCLUDES SUBSTANCES HAVING LOW COMBUSTIBILITY CHARACTERISTICS AND THERE IS A NEED TO USE FOSSIL FUEL TO EFFECTIVELY

BURN THE WASTES, ITS OPERATION MAY ALSO BE ENERGY INTENSIVE. INCINERATORS THAT ARE NOT OPERATED PROPERLY MAY CAUSE AIR POLLUTION PROBLEMS. FINALLY, THERE IS THE PROBLEM OF DISPOSAL OF INCINERATOR ASH AND SCRUBBER WASTES. THOUGH THE WASTE VOLUMES ARE SUBSTANTIALLY REDUCED BY BURNING, THE REMAINDERS OF THE BURNING PROCESS MAY BE SIGNIFICANTLY MORE CONCENTRATED AND MORE TOXIC. IN THEMSELVES THESE RESIDUES MAY POSE A SUBSTANTIAL DISPOSAL AND POTENTIAL HEALTH PROBLEM.

BEFORE HIGH TEMPERATURE BURNING CAN PROVIDE ANY REAL NATIONAL IMPACT ON THE DISPOSAL PROBLEM, FACILITIES NEED TO BE BUILT TO HANDLE A MUCH GREATER VOLUME. OVERALL, THE PROCESS HAS HAD ONLY LIMITED APPLICATION. ITS LARGEST DRAWBACK WOULD SEEM TO BE ITS HIGH COST.

REGIONAL OR AREA-WIDE FACILITIES

DISPOSAL FACILITIES PROVIDING SERVICES ON A REGIONAL OR AREA-WIDE BASIS AS AN ALTERNATIVE TO INDIVIDUAL COMPANY ON SITE FACILITIES--WHETHER INTRASTATE OR INTERSTATE--OFFER ECONOMIC AND ENVIRONMENTAL ADVANTAGES IN THE DEVELOPMENT OF HAZARDOUS WASTE FACILITIES. SUCH FACILITIES ARE BEING PLANNED BY THE NEW ENGLAND REGIONAL COMMISSION AND THE DELAWARE RIVER BASIN COMMISSION. BECAUSE OF THE GREATER GEOGRAPHIC AREA THAT CAN BE CONSIDERED IN LOCATING FACILITIES, THEY CAN BE ESTABLISHED IN GEOLOGICALLY BETTER SUITED LOCATIONS, AWAY FROM CONCENTRATIONS OF POPULATION. IN ADDITION, THE NUMBER OF DISPOSAL SITES MAY BE REDUCED. THERE IS SOME

EVIDENCE THAT PUBLIC OPPOSITION TO THE SITING OF FACILITIES CAN BE POSITIVELY AFFECTED BY THE BROADER BASE OF PARTICIPATION IN THE SITE SELECTION PROCESS. THE ESTABLISHMENT OF FACILITIES ON A REGIONAL BASIS COULD ALSO IMPROVE THE FACILITY PLANNING PROCESS BY BRINGING TOGETHER MORE PEOPLE WITH A GREATER EXPERTISE LEVEL.

RESEARCH AND DEVELOPMENT ACTIVITIES

FOR LAND DISPOSAL, DEEP WELL INJECTION, AND HIGH TEMPERATURE BURNING, WE FOUND THAT BASIC RESEARCH HAS BEEN ESSENTIALLY DONE. ADDITIONAL APPLIED RESEARCH WILL CONTINUE TO BE NECESSARY FOR THE LONG TERM, AS IS THE CASE IN LAND DISPOSAL, AND THE BURNING OF CERTAIN VERY HAZARDOUS SUBSTANCES.

UNTIL RECENTLY EPA WASTE DISPOSAL RESEARCH AND DEVELOPMENT ACTIVITIES EMPHASIZED NON-HAZARDOUS WASTE DISPOSAL PROBLEMS. RESEARCH PROJECTS OFTEN CONCENTRATED ON MUNICIPAL LANDFILL DESIGN, OPERATING PROBLEMS, AND RESOURCE RECOVERY FROM SOLID WASTES. IN 1979, EPA REVISED ITS RESEARCH STRATEGY TO EMPHASIZE THE FOLLOWING SIX CATEGORIES, (1) HAZARDOUS WASTE IDENTIFICATION, (2) UNCONTROLLED WASTE SITE PROBLEMS, (3) HAZARDOUS WASTE TECHNOLOGY (4) HAZARDOUS WASTE RISK ASSESSMENT, (5) ENERGY AND MINERAL WASTES, AND (6) NON-HAZARDOUS WASTES.

FOR FISCAL YEAR 1981, EPA HAS REQUESTED \$26.4 MILLION FOR HAZARDOUS WASTE RESEARCH FUNDS. THIS AMOUNT REPRESENTS A \$21.1 AND \$15.4 MILLION INCREASE OVER FISCAL YEARS 1979

AND 1980 FUNDING LEVELS RESPECTIVELY. OVER ONE-HALF OF THE REQUESTED FUNDS WILL BE APPLIED TO THE FURTHER DEVELOPMENT OF DISPOSAL TECHNOLOGIES, INCLUDING \$8.2 MILLION TO DEVELOP REFINEMENTS IN INCINERATION TECHNIQUES. THE REMAINING RESEARCH FUNDS ARE TO BE APPLIED TO RELATED HAZARDOUS WASTE PROBLEMS SUCH AS TOXICITY AND HEALTH EFFECTS STUDIES.

CLOSED AND ABANDONED SITES

TO DATE THE NATIONAL PROBLEM OF WHAT TO DO ABOUT CLOSED AND ABANDONED HAZARDOUS WASTE SITES HAS NOT BEEN FULLY CONFRONTED BY THE FEDERAL, STATE AND LOCAL GOVERNMENTS OR BY INDUSTRY. EPA CONTINUES TO CONSOLIDATE FROM VARIOUS SOURCES EXISTING INFORMATION ON CLOSED AND ABANDONED SITES, YET IT HAS NOT BEEN ABLE TO COMPLETE THE TYPE OF NATIONAL INVENTORY AND SITE ASSESSMENT PROGRAM THAT HAS BEEN RECOMMENDED BY THIS SUBCOMMITTEE.

WE TESTIFIED BEFORE THIS SUBCOMMITTEE A YEAR AGO THAT THERE WAS NO ACCURATE AND COMPLETE INFORMATION ON THE TOTAL NUMBER OF CLOSED AND ABANDONED SITES, THE EXTENT OF ENVIRONMENTAL DANGER THAT THESE SITES POSE, AND THE TOTAL COST OF CLEANUP. ALTHOUGH EPA HAS STARTED TO EXPAND ITS EFFORTS TO CONFRONT THE CLEANUP PROBLEM, MUCH MORE IS NEEDED. EPA HAS INITIATED A HAZARDOUS WASTE TASK FORCE AND TRACKING SYSTEM; AND CONTRACTED FOR SITE INVESTIGATIONS AND SITE ANALYSES. TO DATE EPA HAS CONCENTRATED, ON THE HIGHLY VISIBLE, EMERGENCY CASES THAT HAVE BEEN BROUGHT UNDER PUBLIC SCRUTINY BY THE CONGRESS, THE GENERAL PUBLIC, AND THE PRESS MEDIA. WE

CONTINUE TO BELIEVE THAT THERE IS A NEED TO COMPLETELY ASSESS THE SCOPE AND NATURE OF THE CLOSED AND ABANDONED SITE PROBLEM AND ITS TRUE ECONOMIC AND ENVIRONMENTAL COST TO THE COUNTRY.

HAZARDOUS WASTE REGULATIONS

AS YOU KNOW THE RECENTLY PUBLISHED HAZARDOUS WASTE REGULATIONS ARE VOLUMINOUS AND COMPLEX. A THOROUGH ANALYSIS WOULD REQUIRE MUCH ADDITIONAL TIME. WE WOULD LIKE, HOWEVER, TO MAKE SOME OBSERVATIONS REGARDING THOSE REGULATIONS THAT APPLY TO OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES.

EPA ACKNOWLEDGES THAT IT MAY TAKE SEVERAL YEARS TO FULLY DEVELOP THE DATA BASE, AND TO PERFORM THE ANALYSES NECESSARY TO RESOLVE THE MORE COMPLEX TECHNICAL ISSUES THAT MAY BE RAISED REGARDING FACILITY OPERATIONS, BEFORE NATIONALLY APPLICABLE DETAILED TECHNICAL STANDARDS FOR FACILITY OPERATIONS CAN BE PROMULGATED. THE REGULATIONS PROMULGATED TO DATE CALLED "PHASE I", LARGELY DEAL WITH PRESCRIBED RECORDKEEPING, AND REPORTING REQUIREMENTS AND "GOOD MANAGEMENT PRACTICES," WHICH ARE NOT HIGHLY TECHNICAL. THE MORE SPECIFIC STANDARDS FOR THE OPERATION OF HAZARDOUS WASTE FACILITIES ARE TO BE PROMULGATED IN PHASES II AND III.

PHASE II, TO BE ISSUED IN THE FALL OF THIS YEAR, WILL PROVIDE ADDITIONAL REGULATIONS TO ALLOW PERMITS TO BE ISSUED FOR FACILITIES BASED ON EACH EPA REGIONAL ADMINISTRATOR'S "BEST ENGINEERING JUDGMENT" OF (1) THE DATA THE APPLICANT

SUBMITS, AND (2) THE TECHNICAL REQUIREMENTS THE FACILITIES SHOULD MEET. IT WILL BE LEFT TO EACH REGION TO DETERMINE WHAT CONSTITUTES AN ADEQUATE FACILITY OPERATION. OUR EXPERIENCE SHOWS THAT A GOVERNMENTAL AGENCY NEEDS TO SPEAK WITH ONE VOICE TO AVOID CONFUSION AND THE POSSIBILITY THAT A FACILITY DEVELOPED BASED ON REQUIREMENTS FOR ONE REGION MAY NOT BE ACCEPTABLE IN ANOTHER.

THE PHASE III REGULATIONS, WHICH EPA HAS STATED MAY TAKE SEVERAL YEARS TO PROMULGATE, WILL DEAL WITH THE FURTHER RESOLUTION OF SPECIFIC TECHNICAL ISSUES SUCH AS SITE DESIGN AND ENGINEERING REQUIREMENTS. STANDARDS MAY BE ESTABLISHED FOR SPECIFIC INDUSTRIES AS WELL AS FOR WASTES REQUIRING SPECIAL CONTROLS. THROUGHOUT THE PROCESS, THE REGULATIONS WILL CONTINUE TO BE CHANGED AND REVISED.

IN THE CASE OF THE LAND DISPOSAL--LANDFILL--REQUIREMENTS, THE REGULATIONS PROVIDE GENERAL OPERATING REQUIREMENTS, INCLUDING GENERAL REQUIREMENTS FOR WASTE ANALYSIS, SURVEYING AND RECORDKEEPING, CLOSURE AND POST CLOSURE OF THE SITE, AND SPECIAL REQUIREMENTS FOR, LIQUID AND INCOMPATIBLE WASTES, AND WASTE CONTAINERS. SPECIFICS ON HOW TO DEVELOP A SITE ARE NOT PROVIDED. WITH REGARD TO THE UNDERGROUND INJECTION CONTROL PROGRAM, THE REGULATIONS HAVE NOT YET SPECIFIED TECHNICAL CRITERIA AND STANDARDS, ALTHOUGH ADDITIONAL REGULATIONS ARE TO BE ISSUED SHORTLY.

OBSERVATIONS

IN SUMMARY, IN THE FACE OF "LOVE CANAL" AND SITUATIONS SUCH AS AT THE "VALLEY OF THE DRUMS" AND IN TOONE, TENNESSEE IT IS NOW GENERALLY AGREED THAT MAJOR NEW EMPHASIS SHOULD BE PROVIDED FOR HAZARDOUS WASTE DISPOSAL PRACTICES IN THE COUNTRY. THE CONTINUED RELIANCE ON LAND DISPOSAL AS THE PREDOMINANT DISPOSAL METHOD FOR THE LONG TERM MAY NEED TO BE SIGNIFICANTLY REDUCED IN VIEW OF THE PROSPECT FOR ENVIRONMENTAL DISASTERS THAT IT MAY ENTAIL. CONSIDERATION ALSO NEEDS TO BE GIVEN TO THE FURTHER DEVELOPMENT AND APPLICATION OF OTHER METHODS OF DISPOSAL, FOR EXAMPLE, THE DEEP WELL INJECTION OF WASTES, AND THE DESTRUCTION OF HAZARDOUS WASTES BY HIGH TEMPERATURE INCINERATION. IT APPEARS FACILITIES NEED TO BE DEVELOPED ON A REGIONAL AS OPPOSED TO ON A LOCAL NEED OR INDIVIDUAL COMPANY BASIS BECAUSE ENVIRONMENTAL AND COST IMPACTS CAN OFTEN BE REDUCED. WE DO NOT PERCEIVE ANY FUNDAMENTAL BASIC RESEARCH NEEDS THAT WOULD PRECLUDE THE DEVELOPMENT OF FACILITIES AT THIS TIME. SUBSTANTIALLY MORE TIME WILL BE NEEDED BEFORE THE HAZARDOUS WASTE REGULATIONS ARE FULLY AND EFFECTIVELY PROMULGATED AND IMPLEMENTED BY EPA. FINALLY, MR. CHAIRMAN, LEGISLATION WHICH CONFRONTS THE ISSUE OF CLOSED AND ABANDONED

DUMP SITES, SUCH AS IS CURRENTLY UNDER CONSIDERATION IN THE CONGRESS IN THE SO CALLED "SUPER FUND," BILLS IS ESSENTIAL TO SOLVING THE CLEANUP PROBLEM FACING THE COUNTRY.

THIS CONCLUDES MY PREPARED STATEMENT. WE WILL BE GLAD TO RESPOND TO ANY QUESTIONS YOU MAY HAVE.