M60050.000150
MCAS EL TORO
SSIC #5090.3

UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
EL TORO (SANTA ANA), CALIFORNIA 92709

IN REPLY REFER TO:
6280
1JA
JUN 21 1985

7/1/85
Dave
Bill
File

From: Commanding General, Marine Corps Air Station El Toro
To: Commanding Officer, Western Division, Naval Facilities Engineering Command, P.O. Box 727, San Bruno, CA 94066 (Code 114)

Subj: ULTROX INTERNATIONAL - WATER CONTAMINANT REMOVAL CAPABILITIES

Encl: (1) Ultrox International ltr of 13 May 85
(2) Ultrox International Bulletins

1. Enclosures (1) and (2) are forwarded for your information and action as deemed appropriate.

J.B. LEAP
By Direction

ULTROX INTERNATIONAL
8780 National Blvd.
Culver City, CA 90232-1598
(213) 204-1124

May 13, 1985

Cpt. Brian Leap
Director, Facilities Management
Code 1JA
Marine Corps Air Station, El Toro
Santa Ana, CA 92709

Dear Captain Leap:

I enjoyed speaking with you today. I have enclosed some of our bulletins for your review concerning our capabilities to remove contaminants from water at your station.

After you and your staff have reviewed this information, please call and we can make suitable arrangements to meet with you either at your office, or our facilities, to discuss further details relating to our possible service to you.

I look forward to your response.

Sincerely,
ULTROX INTERNATIONAL

By Max M Feibelman
Max M. Feibelman
Director New Business Development

B003-42

Enclosure (1)

ULTROX INTERNATIONAL
8780 National Blvd.
Culver City, CA 90232-1598
(213) 204-1124

April, 1985

Demonstration Handout

Fort Dix Landfill-Groundwater Cleanup Demonstration

In response to CERL's request, Ultrox International (UI) has designed and constructed pilot plant equipment to demonstrate the ability of Ultrox's equipment to destroy methylene chloride in Fort Dix groundwater.

The demonstration equipment is using the powerful combination of UV light and ozone (in other cases, it may be UV light and other oxidants) to oxidize difficult-to-biotreat toxic organic compounds in water and air. UI's process does not merely filter out or displace toxic compounds, it either makes them non-toxic or converts them to harmless carbon dioxide and salts.

This pilot plant is confirming that a difficult-to-destroy chlorinated hydrocarbon, namely methylene chloride, can be oxidized in a continually operating system without polluting the air and without leaving behind any sludges or toxic-ladened activated carbon.

What is being seen is proof of these principles of operation. Because the demonstrated system is a pilot plant, it is quite versatile. Its components such as the air recycle-loop compressor, the ozone generator, and the catalytic system are purposely over-sized for the task here at Fort Dix. This equipment is customarily used for both difficult-to-oxidize high-concentration and low-concentration organics in solution or in suspension. It can more economically destroy the easier-to-oxidize organics through a "tuning-down" of the components.

It is from pilot plant test results that we specify and manufacture optimized full-scale systems.

The water flow through this pilot plant system is relatively slow for three reasons as follows:

First, this pilot plant is designed to demonstrate only the technical feasibility of the process. Full scale equipment would have a flow rate many, many times higher.

A proprietary catalytic system is located directly after the closed tank and is used for oxidizing/decomposing of the stripped volatile organics vented from the closed stripping/oxidizing tank. Immediately downstream from the catalytic system, a catalytic ozone decomposer unit removes any ozone remaining in the gas stream.

The air from the O_3 decomposing unit is then drawn into the recycle compressor where the air is compressed, then cooled and dehumidified in an after-cooler. The air is then returned to the ozone generator.

The ozone generator controls are set to inject a prescribed concentration of ozone into the air stream prior to the air being injected into the closed oxidation/stripping tank. Make-up air (for air which is lost by being absorbed in the water as it flows through the closed tank) is drawn in by a slight negative pressure in the closed oxidizing/stripping tank.

We remain available to review specific applications for our equipment.

B001-70

ULTROX INTERNATIONAL
8780 National Blvd.
Culver City, CA 90232-1598
(213) 204-1124

Summary of Fort Dix Demonstration and Test Program

Ultrox International (Ultrox) recently completed a successful pilot plant demonstration treating leachate water at the Superfund Designated Landfill Site at Fort Dix, New Jersey. The leachate was found to be contaminated with 400-500 ppb of purgable organic halogens. (POX's). From previous specific analytical studies, the major contaminant was found to be methylene chloride. The remaining constituents were mainly trichloroethylene, dichloroethylene, and 1,1,1 trichloroethane.

The goal of the program was to demonstrate that the Ultrox equipment could reduce the POX concentration to less than 50 ppb. The pilot demonstration test program began with several shakedown tests to establish the proper operating conditions for Ultrox's system. Once these conditions were known, four tests were carried out to define the best retention times and ozone dosages for the UV/O_3 reactor and the catalytic unit.

The results of the tests showed that the POX levels can be reduced by Ultrox's system to 20-40 ppb, which is significantly below the State of New Jersey's standard of 50 ppb. Approximate operating conditions required to accomplish these acceptable levels were as follows:

UV/O_3 retention time: 60 min

O_3 Concentration: 0.7-1.5 wt %

pH: 5 - 8

O_3 Dosage: 100 - 180 mg/L

From these tests it is estimated that uninstalled pricing of equipment to treat 50,000 gpm of the leachate will run between $150,000 to $200,000 depending upon the POX concentration of the blended leachate, which can range from 75 ppb to 200 ppb.

O & M costs are estimated at 0.1¢/gal to 0.8¢/gal not including amortization of the equipment

B003-11

ULTROX INTERNATIONAL

The Water Treatment Experts Who Provide the SOLUTION to Your Toxic Organic Problems

Making Haste on Waste

New Hazardous Materials Director Lists Priorities

EPA Seeking Record Toxic Waste Fine of $6.8 Million

CHICAGO (AP)—The Environmental Protection Agency announced Thursday that it is seeking the largest toxic waste penalty in its history, $6.8 million, against

plant, the EPA said.

Studies have shown PCBs, or polychlorinated biphenyls, cause liver damage in humans and cancer in laboratory animals.

14 Part I/Thursday,

Military's Toxic Waste Cleanup May Cost 3 to 6 Times 1984 Estimate of $1.5 Bil

Sewage Plants Spewing Pollutants Into the Air

Studies Indicate That Scores of Waste Treatment Facilities Can't Destroy Dangerous Substances

NEWS POLICY/LEGISLATION

Laws protect groundwater from ag chemical storage

MADISON, Wis. — Groundwater protection regulations on bulk storage of fertilizers and pesticides are published by the Agriculture Management Division, Department of Consumer

state standards on storage of bulk fertilizer or bulk pesticides are to be established by the end of this year "for the purpose of protecting the waters of the state from harm due to contamination by fertilizer or pesticides."

Plan to Fund Cleanup of Toxic-Waste Sites Is Being Developed by Chemical Industry

EPA Is Developing Tougher Standards For Biggest Hazardous-Waste Landfills

Water Diversion at Acid Pits Planned

Underground Project Designed to Halt Spread of Pollution

6 THE WALL STREET JOURNAL

Study Says Birth Defects More Frequent In Areas Polluted by Technology Firms

EPA ups estimate of funds needed to clean up waste

Enclosure (2)

CONVENTIONAL TECHNOLOGY

Conventional technologies often do not provide adequate answers to the serious problems posed by toxic organics in groundwater, waste streams, process water, and drinking water supplies.

They either:

- Can't provide adequate degrees of removal, or
- Transfer the water problem to the atmosphere, or
- Concentrate the organic which then must be dealt with elsewhere, or
- Are difficult to control.

THE U.I. PROCESS

Ultrox International, the pioneer in UV/O_3 technology offers the alternative which is a **solution** to toxic organics in water. Over eleven years of concentrated research and development have gone into the proving and perfecting of this technology. Our process is an advanced water treatment method for the effective oxidation and destruction of noxious and carcinogenic, toxic and refractory organics, bacteria and viruses in water.

The process:

- Uses a variable combination of UV light, ozone or other oxidants. Results are far superior to either UV light or ozone used singly.
- Destroys toxic or refractory organic compounds in the ppm or ppb range to acceptable or non-detectable limits.
- Preferentially oxidizes halogenated hydrocarbons such as PCB's, vinyl chloride, kepone, trichloroethylene, and ethylene dichloride to Federal or State standards while leaving background organics relatively untouched.
- Oxidizes and therefore renders harmless a broad range of organics in water including alcohols, aldehydes, amines, chelating compounds, cyanides, detergents, esters, explosives, organic acids, organic salts, pesticides, sugars and many others.

PROCESS FEATURES:

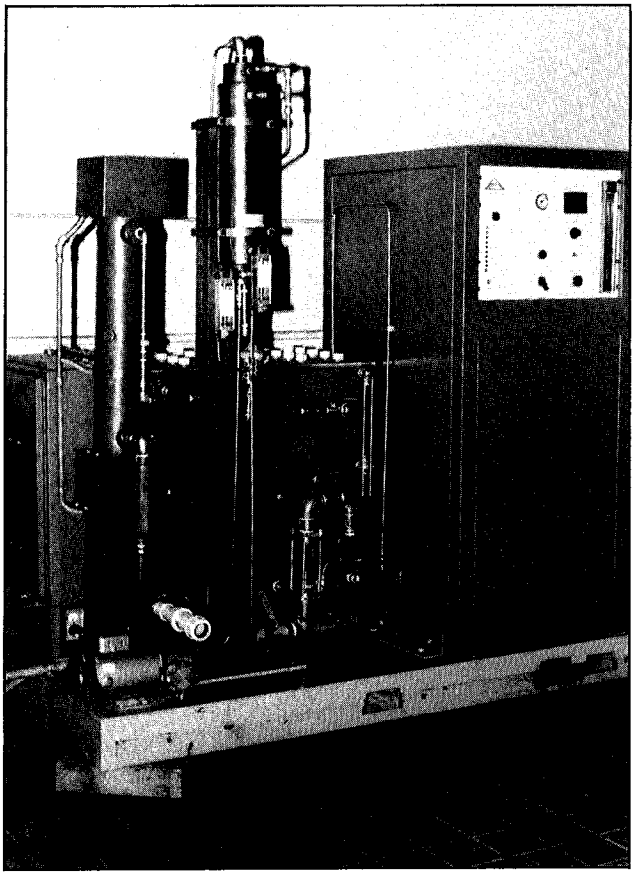
- **Destroys** organics on site. No transportation or residual liability problems.
- Can be operated in a batch mode, intermittently or continuously.
- Uses no chemicals. Electricity is the only input.
- Can be fully automatic. Needs little or no monitoring.
- Has no filtering or absorption media to dispose of, change, or regenerate.
- Compact, low profile
- Economical
- Flexible. Additional modular components can provide for changes in flow rate or degree of contaminant removal.
- Safe
- Quiet
- Clean
- Completely non-venting, if required.

PROCESS APPLICATIONS

- Treatment of ground water, wastewater, process water, drinking water or ultra-pure water—either as a stand-alone system or in a treatment train.
- Pretreatment of industrial wastewater prior to disposal to a Publicly Owned Treatment Works (POTW)
- Final polishing prior to discharge to a receiving water or for water reuse.

LABORATORY TREATABILITY STUDIES

Ultrox International provides bench scale testing of samples of a client's contaminated water to demonstrate the effectiveness of our process. Bench testing can be performed on an hourly fee or a per job basis. Approximate process costs and operating conditions for full-scale treatment can be established from these bench tests.



A typical U.I. pilot plant system

PILOT PLANT TESTS

Skid-mounted pilot plants are available on a rental basis. A pilot plant test program demonstrates operational capabilities at a client's facility under actual field conditions.

FULL SCALE EQUIPMENT

After laboratory studies and pilot plant tests prove the success and cost effectiveness of our process, Ultrox International will design, manufacture, and install full-scale equipment. On-going services, if desired, are available from Ultrox International.

ORGANICS WHICH CAN BE ECONOMICALLY TREATED BY THE U.I. PROCESS

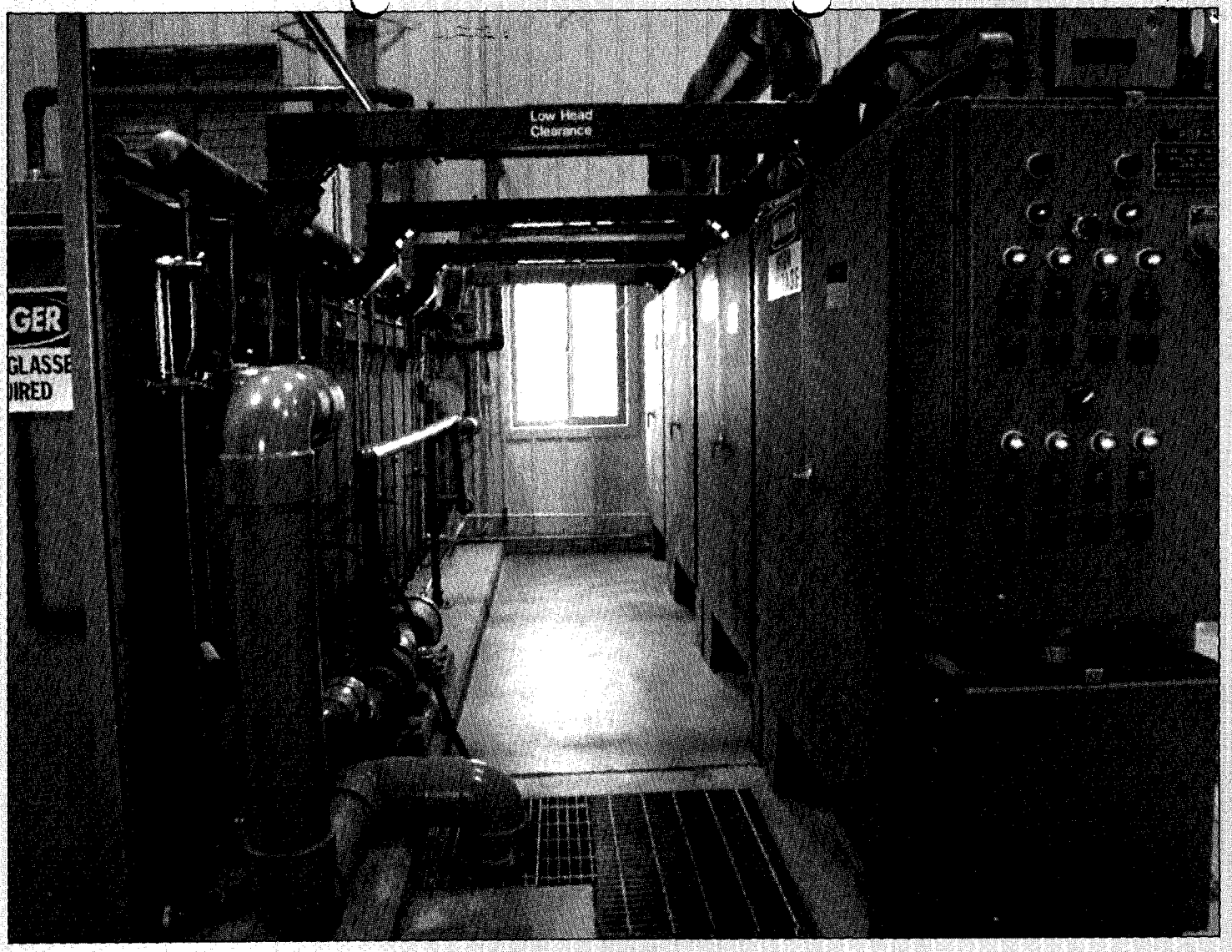
acetaldehyde
acetic acid
alcohols
amines
anisole
aromatics
benzidines
benzoic acid
chelating compounds
chlorinated butanes
chlorinated ethanes
chlorinated pentanes
chlorinated polyaromatics
chlorinated propane
chloroaromatics
chlorophenols
cyanide
detergents
ethylene dichloride
formic acid
glycerols
glycine
glycols
haloaryl ethers
halogenated methanes
hydroquinone
kepone
nitrosamines
nitroaromatics
nitrophenols
organic phosphates
organosulphur compounds
organo-tin compounds
pesticides
phenols
phthalate esters
polyaromatics
polychlorinated biphenyls
RDX
sodium acetate
styrene
sugars
TNT
vinyl chloride

POTENTIAL USERS INCLUDE:

- U.S. Army, Navy and Air Force Installations
- Petrochemical Companies
- Electrical Manufacturers
- Chemical Manufacturers
- Munitions Industries
- Plating Companies
- Plastics Manufacturers
- Photographic Processors
- Municipalities
- Semi-conductor Manufacturers

CONFIDENTIALITY

Due to the sensitive nature of clients' wastewater compliance efforts and their process stream technologies, all information supplied to Ultrox International will be kept in strict confidence in accordance with clients' desires.



Full-scale reactor at client's facility

ULTROX INTERNATIONAL

8780 National Blvd.
Culver City, CA 90232-1598
(213) 204-1124
Outside California (800) 621-3836