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**Report/Article Title** Description of Times Beach, Missouri and the Times Beach Dioxin Research Facility

**Journal/Book Title**

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**Description Notes** Included in the description are maps of the area. Item also includes an announcement of the paper "United States Environmental Protection Agency's Approach to Dealing with 2,4,7,8-TCDD in the Environment."

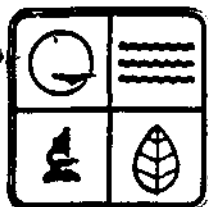
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S  
APPROACH TO DEALING WITH 2,3,7,8-TCDD  
IN THE ENVIRONMENT

Donald G. Barnes, Ph.D.  
Science Advisor to the Assistant Administrator for  
Pesticides and Toxic Substances  
Chairman, Chlorinated Dioxins Work Group  
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In 1976, an explosion in Seveso, Italy focused the world's attention on the environmental risks associated with 2,3,7,8-TCDD. Earlier, the United States had confronted related conditions on a smaller scale in horse arenas in the state of Missouri. Since that time, the issue has grown in intensity and complexity. There are currently more than forty confirmed sites of 2,3,7,8-TCDD contamination in Missouri, and several states with reported contamination within their boundaries.

In December, 1983, the United States Environmental Protection Agency announced its "Dioxin Strategy", which addresses the discovery and clean-up of contaminated sites, research projects, and the significance of "dioxins" other than 2,3,7,8-TCDD. In August, 1984, a major step in the implementation of this strategy was taken with the announcement of the National Dioxin Study.

This paper will review the Dioxin Strategy and the National Dioxin Study, relating these to the past and continuing experiences at Seveso.



## TIMES BEACH DIOXIN RESEARCH FACILITY

One of the conclusions of the Missouri Dioxin Task Force was that further research needs to be conducted to determine dioxin destruction methods. The Missouri Department of Natural Resources (MDNR) recently assisted in establishing a dioxin research group. This group consists of governmental agencies (MDNR, EPA, Missouri Division of Health), industry and the University of Missouri. This group also has concluded that in-situ research at Times Beach, Missouri, would be of great help in determining destruction methods for dioxin contaminated soils. Based on the group's conclusions, the MDNR is soliciting proposals for conducting in-situ research on dioxin contaminated soil at Times Beach, Missouri, beginning during the summer of 1984.

The objectives of this project are twofold. The first is to isolate those technologies that have potential to detoxify dioxin contaminated material. The second objective is to compare different successful technologies for application to solve the crisis. Once potential technologies have been identified, long-term funding mechanisms can be looked at for those processes by the regulatory agencies.

Laurel Road in Times Beach, Missouri, has been selected as the area for conducting in-situ dioxin destruction investigations. The street is bounded on the west and east sides by Orchid Drive and Beach Drive, respectively (see map). The concentration of dioxin in soils is in the range of 100-300 ppb.

Christopher S. Bond Governor  
Fred A. Lafser Director

Division of Environmental Quality  
Robert J. Schreiber Jr., P.E. Director

MISSOURI DEPARTMENT OF NATURAL RESOURCES  
P.O. Box 1368 Jefferson City, Missouri 65102 (314) 751-3241  
1915 Southridge Drive

The MDNR acting on the suggestions of the research group has set up the program by excavating a two block portion of Laurel Road. The soil and gravel were homogenized by mixing them thoroughly. The soil was then screened to remove the larger gravel and rocks. The screened material was then laid back into stainless steel bins six feet by eight feet by two feet deep and compacted back to the original density. A bottom liner was installed to drain liquids seeping through the soil. Water and power outlets are being provided at each plot. An on-site soils laboratory is also available. Security arrangements such as lockers and a decontamination facility are also available. A full-time MDNR on-site coordinator is available to oversee operations and ensure that security is maintained. Emergency services are also available.

A comprehensive sampling and analysis program was conducted to determine initial reference levels prior to implementing research proposals. The plots are currently available for in-situ investigations. The group has decided that at least three units be made available per research group. This would give the researcher an opportunity to create a standard reference unit and vary parameters as necessary in the other two units. Standardized soil could be made available for in-house research, if the researcher demonstrates that he has the resources for in-house management of dioxin.

During the investigation, close monitoring will be maintained by the research group to assess the progress. At the end of the investigation, the group will review the project's accomplishments and will take the appropriate actions such as disbursing the information or recommending that the process be applied at a given site.

Funding mechanisms for the program are being evaluated. It is anticipated that the majority of the proposers would be self-funded industrial entities. The cost for leasing a plot (set of three units) is \$16,500 to be paid initially. This one time fee is essentially the cost of preparation of the plot along with sampling and analysis costs before and after a research project is complete. This sampling and analysis will provide MDNR verification of a project's success.

For further information, contact either Robert Schreiber or Vivek Goswamy at (314) 751-3241.

## TIMES BEACH

### Location

Legal Description: Floodplain of the Meramec River, principally W 1/2, Sec. 32, and E 1/2, E 1/2, Sec. 31, T.44 N., N., R. 4 E., 5th P.M. Manchester Quadrangle St. Louis County  
Latitude: 38° 30' 33"  
Longitude: 90° 36' 08"  
Population 2,061 (None at Present)

### Accessibility

Times Beach can be entered by any of three routes. Interstate 44 exits onto a northern outer road which goes into the City. Lewis Road from the north also connects with the I-44 outer road. The third access route is from the City of Eureka south of I-44 onto Times Beach Service Road.

### History Summary

In June 1972, a city ordinance was passed to contract with a waste oil hauler to spray the roads for dust control. Apparently all of the gravel streets were oiled that summer twice and a third time where needed, as recalled by residents. In 1973, the roads were again sprayed by contract. The agreement was to have approximately ten miles of road oiled. Five additional streets had been paved so less oiling was done that year. EPA sampled the roads and right-of-ways in November and December 1982, and found 2,3,7,8-TCDD levels up to 127 ppb. In December 1982, the Meramec River flooded the town. EPA sampling in January 1983 following the flood showed that the contaminated soil remained quite immobile throughout the flooding. On February 22, 1983, the EPA Administrator announced a \$33 million pledge from superfund to purchase the Times Beach property under a relocation plan to be developed and implemented by the Federal Emergency Management Agency (FEMA). EPA is planning to have a feasibility study conducted to determine the scope and costs of cleanup alternatives. The city is on the National Priorities List.

### Site Description (see maps)

Times Beach is principally bounded by the Meramec River, Interstate 44, and the Burlington Northern Railroad tracks. Being in the 100-year floodplain, the area is relatively flat. The majority of the city's 28 miles of paved and gravel road, shoulders, and ditches are contaminated. Maximum levels of 2,3,7,8-TCDD are shown on the city map. Contamination has been found down to at least two feet below the surface. The City of Eureka, population 3,862 lies immediately to the south and west of Times Beach. None of Eureka's streets were oiled and no contamination has been found within the city. Results of all groundwater sampling in the area have been negative.

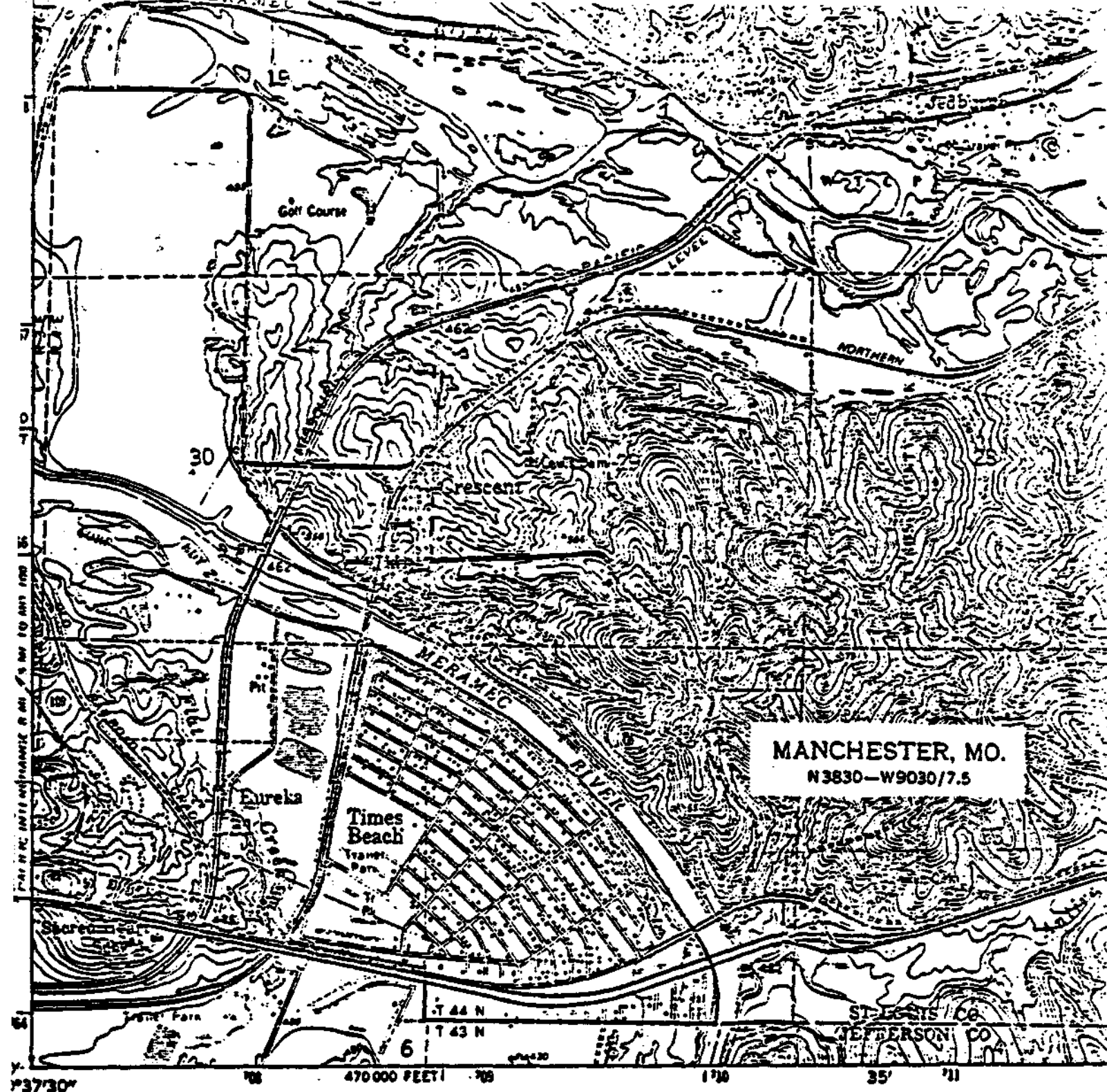
## Geologic and Soils Description

Times Beach is on an alluvial setting, underlain by alluvial silt to a depth of more than 5 feet. Below the alluvial silts; sand, gravel, and a mixture of silt, sand, and clay would be expected to a depth of from 40 to 50 feet where bedrock is encountered. The water table would be expected to be about at the Meramec River level, between 10 and 20 feet from the surface in most of the area.

The alluvial silt has a relatively low permeability and would be expected to be wet natured in that it does not readily or rapidly drain water. Due to this and the screening effect of the silt, it is not likely that soil particles contaminated with dioxin would move down into the water table.

It can be assumed that the contaminated material consists of road bed material plus native soil where the contamination has eroded into the ditches.





Mapped by the Army Map Service  
Published for civil use by the Geological Survey

Control by USGS, USC&GS, and USCE

Topography from aerial photographs by photogrammetric methods  
Aerial photographs taken 1952. Field check 1954

Polyconic projection, 1927 North American datum  
10,000-foot grid based on Missouri coordinate system, east zone  
1000-meter Universal Transverse Mercator grid ticks, zone 15,  
shown in blue

Dashed land lines indicate approximate locations

Unchecked elevations are shown in brown

To place on the predicted North American Datum 1983  
move the projection lines 2 meters south and  
10 meters east as shown by dashed corner ticks



UTM GRID AND 1982 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET

There may be private inholdings within  
the boundaries of the National or  
State reservations shown on this map



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A FOLDER DESIGNATION

# TIMES BEACH, MISSOURI

## U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 7 - KANSAS CITY

Pre-Flood and Post-Flood Dioxin Analysis  
183 of 369 Samples Available as of 2/4/83  
Quality assurance has not been completed  
for these values

### LEGEND

Less than 1 ppb  
1 - 5 ppb  
5 - 20 ppb  
20 - 100 ppb  
100 - 300 ppb

\* Parts Per Billion

• Houses

Y Yard St.

Y Driveway  
CSFB

