



State of Wisconsin

DEPARTMENT OF HEALTH
AND SOCIAL SERVICES

DIVISION OF HEALTH
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**PRELIMINARY HEALTH ASSESSMENT
WAUSAU GROUNDWATER CONTAMINATION
MARATHON COUNTY
WAUSAU, WISCONSIN
June 1989**

**Prepared by:
Wisconsin Division of Health
Madison, Wisconsin**

**Prepared for:
Office of Health Assessment
Agency for Toxic Substances and Disease registry (ATSDR)**

SUMMARY

Wausau's drinking water well field was found to be contaminated with several volatile organic compounds (VOCs) at levels of health concern in 1982. The well field is located in an area of about one mile by 2/3 mile, encompassing business, light industry and residential areas. Contaminants occur in areas of the well field both east and west of the Wisconsin River. The remedial investigation has tentatively identified some sources of contamination. Contaminated water from the well field is pumped to Wausau's municipal water facility and passes through two air strippers that remove VOCs. The water is then blended with uncontaminated water, to meet United States Environmental Protection Agency's (EPA) drinking water standards.

Air strippers have significantly reduced the concentration of VOCs in the public water supply. There remains a possibility of public exposure to VOC's in; soil at a chemical plant near the municipal water facility, water discharged from a VOC stripper at the chemical plant, air above that water discharge, and from air above the strippers located at the municipal water facility and the chemical plant. These areas should be sampled for VOCs and evaluated further.

BACKGROUND

SITE DESCRIPTION

The Wausau Groundwater Contamination site, located in Marathon County, is listed by the EPA on the National Priority List. It

encompasses an area of approximately one mile by 2/3 mile and includes the downtown area, industrial parks and residential areas. The Wisconsin River divides the well field into east and west areas.

Parts of Wausau's well field are contaminated with VOCs. Three city wells CW6, CW7 and CW9, located west of the Wisconsin River, are in a predominantly residential area which also includes a producer of electrical equipment. A parking lot at this company covers the location of the old city landfill where contaminants may be leaching to the groundwater. On the east side CW3 and CW4 are adjacent to the municipal water facility in a predominantly industrial area. Contamination of the east side of the well field is thought to come from several sources, including a chemical plant immediately adjacent to these wells.

In 1975 the discovery of trichloroethylene and tetrachloroethylene contamination of CW4 at 1 ppb (part per billion) was not considered to be of health concern. In 1982, higher levels of VOCs were found in the city water system. Production wells CW3, CW4 and CW6 were found to contain VOCs as did an industrial well. Affected city wells were removed from service. Concentrations of less than 25 ppb of petroleum-related compounds (primarily toluene) were found in CW3 and CW4. The source of the VOCs was not known.

Trichloroethylene is the predominant VOC at CW6 on the west side and tetrachloroethylene, trichloroethylene and 1,2-dichloroethene, are the predominant contaminants on the east side. Trihalomethanes were also found in the city water system and attributed to the water chlorination process. Blending of city water was used on a temporary basis to reduce contaminant concentrations in city water.

In 1984, an interim carbon filter system was installed until two air strippers could be constructed. The air strippers, installed at the municipal water facility in summer and fall of 1984, replaced the carbon filters as a long-term solution for providing acceptable drinking water to city residents. Uncontaminated water from CW7 and CW9 is blended with treated water from contaminated wells to reduce VOC concentrations in the water supply distribution system. According to city officials, stripper use and blending have significantly reduced contamination in finished city water to levels below federal drinking water standards.

Investigations of the sources of VOC contamination of the Wausau well field have been conducted by several consulting firms.

SITE VISIT

On June 24, 1988 staff from the Wisconsin Division of Health and Wisconsin Department of Natural Resources toured the Wausau Groundwater Contamination site. During the tour of the site it was noticed that at two different locations, large diameter pipes were feeding potentially contaminated water into city storm sewers at street level. Apparently, discharges from CW6 into one storm sewer are directed into Bos Creek while the other discharges water from an air stripper at a chemical company into the Wisconsin River. While visiting the municipal water facility, it was noted that a chemical company was still handling large numbers of chemical barrels immediately adjacent to the water plant and its production wells. Numerous monitoring wells are located between the chemical company and the municipal water facility. Air strippers were visible at the municipal water facility and at the adjacent chemical company .

Note: As of the summer of 1988, water is no longer being discharged from well CW6 into Bos Creek.

ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

ON-SITE CONTAMINATION

Wausau's well field, draws from an aquifer that has areas of contamination. Air strippers, at the chemical company and the municipal water facility, increase the airborne component of the on-site contamination. Water discharged from the air stripper at the chemical company is a potential source of surface water contamination. Soil at the chemical company may also be contaminated.

OFF-SITE CONTAMINATION

Prior to the installation of strippers in 1984, contaminated water was distributed throughout the city by the municipal water system. At the time of this report, water entering the distribution system at the municipal water facility met water quality standards.

PHYSICAL HAZARDS

No physical hazards were identified.

DEMOGRAPHICS

Approximately 32,000 people live within a three-mile radius of the site. The area comprises both commercial, industrial, and residential properties.

The Wisconsin River, which bisects the area, is used for commercial and recreation purposes.

EVALUATION

ENVIRONMENTAL PATHWAYS

Groundwater drawn from several city wells is contaminated with VOCs. Water from the contaminated aquifer is treated via air strippers, mixed with clean water, and distributed by the city water utility for general use. Soils on the site may be contaminated where VOCs were spilled in the past. Contamination of air may occur via volatilization of chemicals from potentially contaminated water directed into city sewers and from air strippers. Chemicals from spills may be absorbed to soil particles which may be transportable by air. Surface water, groundwater, air, and soils may be environmental pathways of concern. There is no evidence of contamination in plants or consumable animals.

HUMAN EXPOSURE PATHWAYS

Potential sources of human exposure to contaminants include air, surface water, soil, and groundwater. Exposure to contaminated groundwater via drinking water may occur if the municipal water facility stripper does not effectively remove the contaminants listed in an earlier section of this document. Air contamination could occur at the entrance of the storm sewer, by volatilization of contaminants from the air stripper discharge water coming from the chemical plant. People may be exposed to VOCs in discharge water by dermal contact and, perhaps, by ingestion. The air stripper emissions from the municipal water facility and the chemical plant could result in inhalation exposure. Exposure to contaminants in soil can result from dermal contact, ingestion of dust particles or inhalation of dust particles.

PUBLIC HEALTH IMPLICATIONS

Municipal drinking water quality data has shown that Wausau citizens are not being exposed to levels of VOCs that would constitute a health concern. Levels of contaminants in drinking water are currently below the standards set by the EPA.

Health concerns regarding dermal contact with soils can be determined when the testing results are available for contaminants at the chemical company. Discharge water and the air above it may constitute a health concern for people in the vicinity of the discharge from the chemical company's air stripper. VOCs emitted by air strippers may be a health concern for people in the vicinity of those structures.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Based on available information, this site is considered to be of potential public health concern. Risk to human health can be caused by the possibility of exposure to hazardous substances via contaminated groundwater, air and water discharges from air strippers, and contaminated soils at spill sites.

RECOMMENDATIONS

Soils will be sampled for VOCs during the remedial investigation. If contamination is found at concentrations of public health concern, the soil should be removed or access to them should be restricted. Measurement of VOC emissions from the air strippers should be performed in concert with an evaluation of potential human exposure and health risks resulting from air stripper emissions. Access to the discharge water from the chemical company air stripper should be restricted.

Further environmental characterization and sampling of the site and impacted off-site areas during the Remedial Investigation and Feasibility Study (RI/FS) should be designed to address the environmental and human exposure pathways discussed above. When the Remedial Investigation is complete and information becomes available, the Wisconsin Division of Health will evaluate its data and write a full health assessment.

PREPARERS OF REPORT

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REFERENCES

The following documents were provided by the State of Wisconsin Department of Health and Social Services for review:

Document	Date of Document
1. Hazard Ranking Score (HRS) Document	12/27/84
2. Preliminary Assessment	8/7/84
3. Site Assessment and Recommended Immediate Actions	5/84
4. On-Scene Coordinators Report's	3/2/84
5. Phase I Remedial Investigation, Wausau Water Supply NPL Site, Wausau, WI, Warzyn Engineering Inc., Madison, WI.	4/8
6. Letter to Louise Fabinski From Georgi Jones	6/25/84

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| 7. Hydrogeological Investigation of
Volatile Organic compound Contamination
in Wausau, Wisconsin, Municipal Wells.
Roy F. Weston, Inc. | 9/85 |
| 8. HRS and Accompanying Documents | 1984-85 |
| 9. Record of Decision: Selected Interim Remedial
Alternative | 12/88 |

These documents form the basis of this Preliminary Health Assessment.

6/15/89

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M A I N E

Wausau
City of
Water Supply

WISCONSIN RIVER

WAUSAU

University of Wisconsin
(Extension)
COUNTY
FARGROJND

Technical Institute

36 Hammond Park

Sewage Disposal

Our Saviors Sch.

SCHOOLFIELD 3 MI
SINGLE 1/2 IN. = 1 MI

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