# Letter Health Consultation

WAYNESVILLE PHARMACY

WAYNESVILLE, NORTH CAROLINA

**Prepared by the**
**North Carolina Department of Health and Human Services**

MARCH 3, 2010

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

**Health Consultation: A Note of Explanation**

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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# LETTER HEALTH CONSULTATION

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Prepared By:

North Carolina Department of Health and Human Services
Division of Public Health
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LETTER HEALTH CONSULTATION

To: Kristy Thompson
From: Jesse McDaniel, CIH, CSP NC HACE
Subject: Waynesville Pharmacy
Date: March 2, 2010

In response to a citizen concern, the Environmental Protection Agency (EPA) requested that the NC Health Assessment, Consultation, and Education Program (HACE) evaluate potential chemical exposures at the Waynesville Pharmacy. The pharmacy is located approximately 1 block from the Benfield Industries Site. The building was previously used as a retail outlet for chemicals distributed by Benfield Industries.

Benfield Industries mixed and packaged chemicals from 1976 until the facility was destroyed by a fire in April 1982. Products distributed by Benfield Industries included paint thinners, solvents, sealers, de-icing solutions, and wood preservatives. Numerous volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) were identified in soil and groundwater at the former production site. The Benfield Industries site was added to the National Priorities List (NPL) in 1989. Remediation of the soil and groundwater was initiated in 1998.

The building currently leased by Waynesville Pharmacy is approximately 100 years old and is located 1 block north of the Benfield Industries NPL site. It is a one story masonry structure constructed on a concrete slab. The building has approximately 1477 square feet of floor space and is heated/cooled by an electric heat pump with a propane backup. It is connected to the municipal water and sewer system.

The pharmacy has leased the building for 7 years. Prior uses of the building in chronological order include a post office, Benfield Industries retail outlet, automotive trim shop, and hair salon. Benfield Industries reportedly stored 1 and 5 gallon containers of packaged product in the building but did not mix chemicals at this site. The building was vacant for a number of years after Benfield Industries closed.

The pharmacy staff expressed concern that lung and respiratory illnesses experienced by employees were related to the chemicals previously stored in the building by Benfield Industries. The types of illness reported include pneumonia, allergies, and upper respiratory system infections. Several employees reported an intermittent chemical odor in the back portion of the facility. Other employees described the odor as “sewer gas”.

**Discussion**

Benfield Industries NPL site

Remediation of the Benfield Industries NPL site began in 1998. Contaminated soil was excavated, cleaned and replaced in 1998. After the soil remediation, an additional 2 to 4 ft layer of clean soil was added to lift the property above the 100 year flood zone. Contaminated groundwater was extracted and treated on-site from 2001 until 2007. The nearest off-site groundwater monitoring well is located more than 200 feet west of the

pharmacy. A second groundwater monitoring well was located approximately 200 feet southeast of the Pharmacy on the Benfield site. The highest concentration of VOCs (chlorobenzene and 1, 2-dichlorobenzene) detected in groundwater at these wells was 2 parts per billion (ppb).[1] The highest concentration measured is below the screening value for these contaminants. An investigation of the Benfield Industries NPL site by NC HACE concluded that no pathways exist for exposure by air or vapor intrusion[2]. The pharmacy utilizes municipal water; therefore, no groundwater exposure pathway exists.

Chemical Storage

The primary concern expressed by the pharmacy staff centered on the previous storage of Benfield Industry products in the building. Benfield Industries closed in 1982, so it has been more than 25 years since the chemical products were stored in the building.

The current property owner stated that the building was an open (exterior wall) design when he purchased it. Extensive renovations were performed before the building was converted to a hair salon. The changes included a new roof, HVAC system, composite floor tiles, plumbing system, and sheetrock walls. The owner was not aware of any chemical odors or respiratory issues when the hair salon occupied the building. Additional modifications were made to the facility when the pharmacy leased the property approximately 7 years ago.

The pharmacy staff performs the daily cleaning of the building. A few chemicals (Chlorox, Pine Sol, Round-up) were observed in the utility room of the pharmacy during the site visit. Humidity readings were within the normal range (40% RH and 70$^{o}$ F) and no chemical odor was evident at the time of the site visit. A screening sample was taken using a toluene detector tube. Toluene was selected because it is a common constituent in the types of products once manufactured at Benfield Industries and it was one of the contaminants identified at the Benfield NPL site. No color change was noted (limit of detection <1ppm) in the screening sample. The odor threshold for toluene is reported as 2.9 ppm[3].

No additional air monitoring data was available for the facility. It is unlikely the intermittent odor is related to chemicals previously stored at the facility because of the length of time (>25 years), type of activity (retail storage), and subsequent facility renovations. There also was no evidence that the reported odor was related to any of the cleaning supplies used/stored at the pharmacy.

Building Systems

The public area of the pharmacy is an open design with a counter separating the pharmacy dispensing area from the rest of the store. The back of the store has a central hall with office, storage room, bathroom, and utility room. The heating ventilation and air conditioning (HVAC) system air handler is located in the utility room. Condensate is drained from the cooling coils via a 1-inch PVC pipe to a small condensate pump located on the floor (see photo 1). The condensate is pumped through quarter inch tubing to a sink in the next room. The tubing runs from the floor up to and along the ceiling to a sink located in the adjacent room. The tubing is more than 20 ft in length and microbial growth was visible in the line (see photos 2 and 3). The length of the tubing, vertical

rise, and microbial growth in the line may prevent the proper draining of the HVAC system condensate pan. Any resulting microbial growth in the condensate pan can be entrained in the air stream and distributed to occupied areas. This can result in a musty odor and building occupants experiencing upper respiratory system irritation.

The building plumbing system utilizes air admittance valves (AAV) to minimize the number of connections to a central vent stack (see photo 4). The AAV are one way valves that are designed to open when water is discharged from the sink. This allows air to enter the plumbing system and the wastewater to properly drain. When the water flow stops, the valve re-seals and prevents sewer gas from entering the occupied building spaces. If the valve fails or is not properly attached to the PVC piping, sewer gas could enter the building. The AAV was not properly attached (loose) in at least one location (see photo 5). This or other loose fittings downstream from the water traps could account for the intermittent nature of the odor.

**Conclusions/Recommendations**:
NC HACE concludes that a valid exposure pathway was not documented for contaminants from the Benfield Industries NPL Site. We also conclude that it is unlikely chemicals previously stored in the building are the source of the odor or respiratory illnesses.

NC HACE concludes that the most likely source of the odor and possibly the respiratory system irritation is the building HVAC and/or plumbing systems. Any potential exposure to contaminants is not expected to cause long term harm to people's health because the primary adverse reactions are headaches, unpleasant odors, and upper respiratory system irritation.

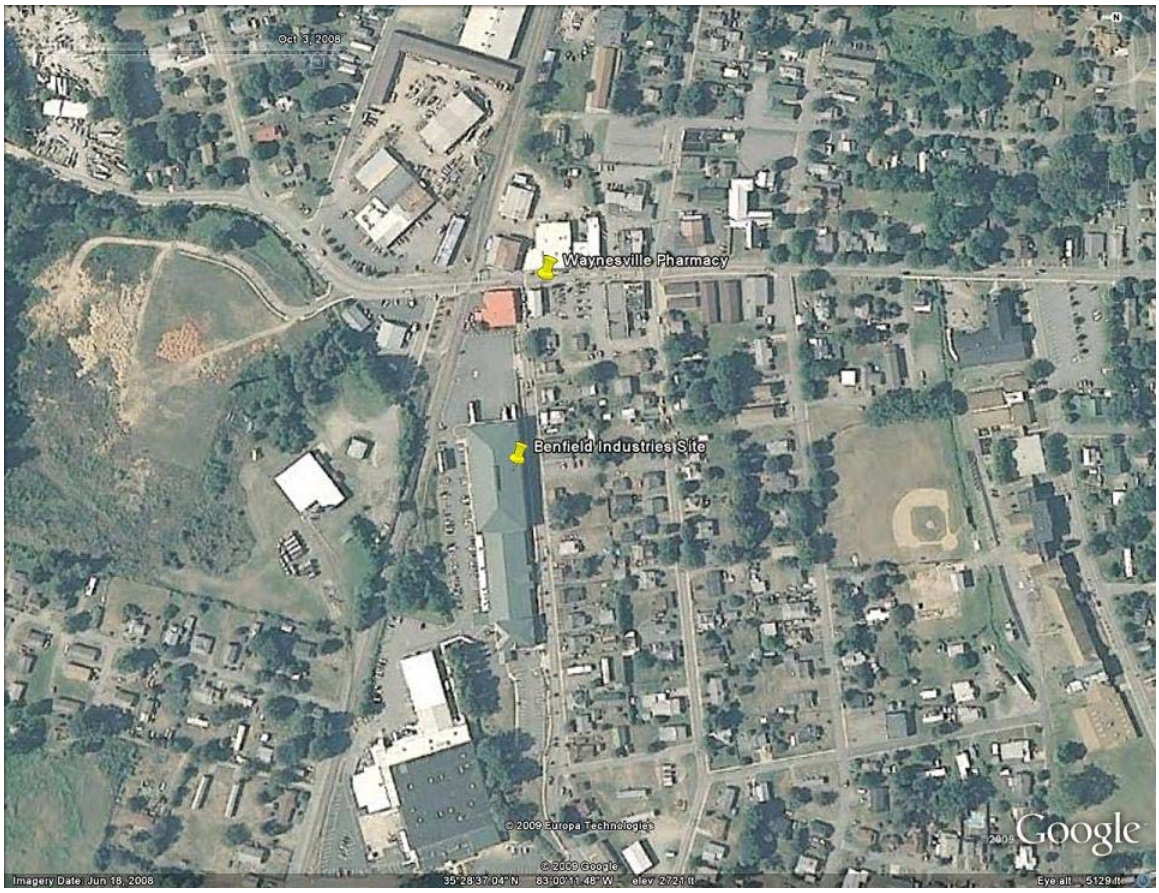
NC HACE recommends that the plumbing system be inspected to identify and seal any loose fittings. The AVV should also be checked to ensure the valves are operating properly. No floor drains were observed during the site visit. However, the building should be thoroughly inspected to confirm the absence of floor drains. Sewer gas could enter the occupied space if the water traps in the drains are allowed to dry out.

NC HACE also recommends that alternatives to the current HVAC condensate tubing be investigated. A more direct pathway will decrease the likelihood of the tubing becoming plugged and water building up in the condensate pan. Routine maintenance of the HVAC system and filter replacement may also reduce upper respiratory system irritation of building occupants.

**References**
[1] Environmental Protection Agency, Benfield Industries Superfund Site Five Year Review, July 2008.
[2] NC Dept. of Health and Human Services, Benfield Industries NPL Site Public Health Assessment (in progress).
[3] Environmental Protection Agency, Technology Transfer Network, Air Toxics Toluene, Revised 2000.

# Appendix A: Satellite and Street Map

## Satellite Photo of Site

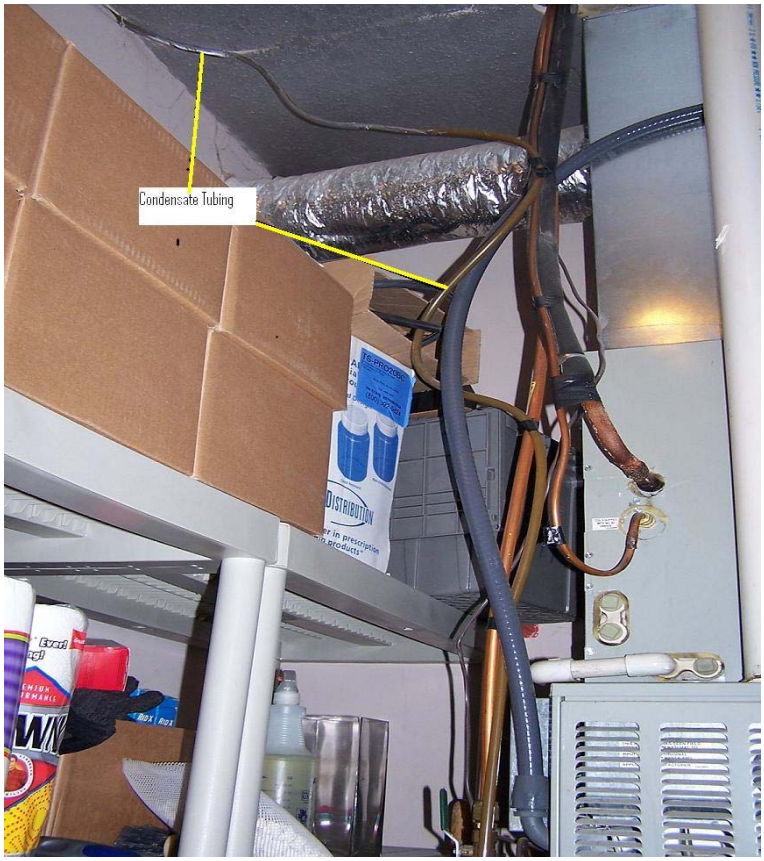


## Appendix B: Photographs
## Waynesville Pharmacy

## Photo 1: HVAC Condensate Pump


PVC pipe leads into the condensate pump from the HVAC condensate pan. Rubber tubing exits the pump and runs along the ceiling.

## Photo 2: Condensate Tubing




## Photo 3: Condensate Tubing Along the Ceiling

## Photo 4: Air Admittance Valve

## Photo 5:  Loose Fitting For Air Admittance Valve

## CERTIFICATION

This Letter Health Consultation for Waynesville Pharmacy was prepared by the North Carolina Division of Public Health (N.C. DHHS) under a cooperative agreement with the Federal Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consult and update was initiated. Editorial review was completed by the cooperative agreement partner.

Jennifer A. Freed
Technical Project Officer
Division of Health Assessment and Consultation (DHAC)
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.

Alan Yarbrough
Team Leader,
CAT, CAPEB, DHAC, ATSDR