

Health Consultation

NEODESHA REFINERY
(FORMER AMOCO REFINERY)
New Beginnings Facility

NEODESHA, WILSON COUNTY, KANSAS

APRIL 28, 2006

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR 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 which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

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Prepared by:

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FOREWORD

A Health Consultation titled “Neodesha Refinery (former Amoco Refinery) ” was originally released for “Public Comment” in October 2003. During the public comment period, numerous comments were received from community members, city officials and personnel of BP Products North American Inc. (BP).

The Agency for Toxic Substances and Disease Registry (ATSDR) also acknowledges that since the release of the document for “Public Comment” ongoing investigations have added to our understanding of the site. Data from several of those investigations were made available during, or since, the time the “Public Comment” document was released.

As a result ATSDR has chosen to produce a series of documents that focus on: 1) lead levels at the New Beginnings facility, 2) metals in soil in other areas of the former refinery site 3) metals in soil at the smelter site, and 4) volatile organic compounds in ground water, and the soil vapor and air data at the former refinery site. This document addresses the New Beginnings facility.

ATSDR continues to work with Kansas Department of Health and Environment (KDEH), Retec Group Inc. (RETEC, the consulting firm hired by BP), and the local government and community members to assess environmental exposures to residents of the Neodesha community. It remains ATSDR’s intention to work with the Neodesha community and government agencies to gain a better understanding of environmental exposures in the area, and to provide the community with current assessments and recommendations for reducing exposures to environmental contaminants.

Statement of Issue

In January 2002, the Agency for Toxic Substances and Disease Registry (ATSDR) received a letter petitioning the agency to evaluate community exposures to metal contamination in soil near the New Beginnings facility at the former refinery site in Neodesha, KS. The New Beginnings facility is an adult training and care facility. This facility was specifically mentioned in the petition request as an area of concern. ATSDR evaluated data collected at the New Beginnings facility to address the petitioners concerns about environmental issues with metal contamination in the soil.

ATSDR conducted several site visits in 2002 at the former refinery site. ATSDR personnel met with BP representatives, the petitioner, a representative from the Kansas Department of Health and Environment, and other concerned community members. ATSDR representatives were provided with a tour of the facility by representatives of BP, their contractor RETEC, KDHE, and a group of community members. ATSDR held a public availability session in July 2002 in Neodesha, KS. Approximately 30 community members, representatives from KDHE, BP, and local media affiliates attended the town meeting. The two concerns stated in discussions about the New Beginnings facility were 1) possible lead exposures and 2) other possible exposure concerns related to the facility.

In June and September 2002 and in November 2003 ATSDR regional staff accompanied KDHE, BP and community members on additional site visits to address community concerns and observe environmental sampling activities.

Background

Site Background Information

The former refinery site is located in Neodesha, Kansas. Neodesha is approximately 20 miles north of Independence, Kansas and 100 miles north of Tulsa, Oklahoma. The Fall and Verdigris rivers converge southeast of the city. U.S. Census Bureau's statistics for the city of Neodesha estimate a population of 2,848 within the city, and 3,049 within a 1 mile radius of the former refinery (Figure 1) [2].

The former facility property encompasses approximately 185 acres. The Standard Oil Company (later Amoco Oil and then BP) owned the site and operated the refinery for 73 years, from 1897 until 1970. The refinery processed up to 30,000 barrels of crude oil a day. Crude oil and products were stored in tanks at the former refinery in the area called the tank farm. Investigations for BP determined that there is soil and groundwater contamination on the former refinery property. The contaminants include both metal and refinery products. ATSDR will evaluate these contaminated medias in separate Health Consultations.

In 1970, Amoco Oil donated the site, except the northern portion of the former tank farm, to the city of Neodesha. The north portion of the tank farm was sold to Williams Pipe-

Line Company, who used it for storing and transporting heating oil. Williams dismantled the tanks in 1988; this area remains undeveloped. The former refinery site property is currently owned by the city of Neodesha, Williams Pipe Line Company, and various other businesses. The area is now occupied by light industry and small businesses. There are a few residences adjacent to the north and northwest site boundaries; the city of Neodesha is directly east.

New Beginnings Facility information

The New Beginnings facility is located on the southwest corner of Tank Avenue and Maple Street on what was formerly BP owned property (figure 2). It is the northern area designated as a non-operational part of the former refinery. The New Beginnings facility is surrounded by deed restricted properties, but is not designated a deed restricted property by the City of Neodesha. This adult day care facility serves a combined fifty staff members and students with ten to fifteen visitors per day. Historically, the areas adjacent to New Beginnings facility were used for product storage. New Beginnings facility is west of a groundwater benzene plume which is well documented, and will be discussed in subsequent ATSDR health consultation.

Exposure to Soil Contaminants and Soil Sampling, Data from New Beginnings Facility

In this health consultation ATSDR focused on the levels of lead in the soil in areas where persons working, attending or visiting New Beginnings facility would most likely come into contact with soil (Figure 2). The visitors or attendees of New Beginnings facility could come into direct contact with soil contaminants while playing, visiting or working at the facility. Surface soil samples (0-6") are most relevant for direct human recreational or residential exposures. Therefore, only surface soil samples are included in our evaluation of the New Beginnings facility. Incidental ingestion of the soil is the most likely exposure route, however inhalation of contaminated dust, and/or direct contact with skin are also possible.

ATSDR focused on the soil lead levels in areas close to the New Beginnings facility (Figure 2).

Lead levels in the eight surface soil samples (numbered 1 through 8 on figure 2) collected near the New Beginnings facility ranged from 15.6 to 181 mg/kg with an average of 56.5 mg/kg (Table 1). The four samples (sample numbers 2,3,4,&6) located on the New Beginnings facility had lead levels that averaged 65.3 mg/kg with the highest lead level at 181 mg/kg (Table 1).

Public Health Implications Related to New Beginnings Facility

Community members that attend New Beginnings facility daily may be exposed to contaminants through ingestion of soil, this exposure could occur through outdoor activities. However the Risk Assessment performed by RETEC showed that no metal

concentration exceeded KDHE Tier II non-residential screening value [3]. RETEC also compared soil data at the New Beginnings facility to KDHE Tier II residential screening levels and again all surface soil sample results were below KDHE Tier II residential screening levels [2].

The metal sampling results for lead at the New Beginnings are also well below the risk-based standards for Kansas (RSK) and EPA's Preliminary Remediation Goals (PRGs) (Region 9) for lead in residential soils of 400 mg/kg. In addition, other metals at the New Beginnings facility are also below Kansas RSKs, and EPA's Preliminary Remediation Goals (PRGs) (Region 9) (Table 1).

Because all of the values were below the health based comparison values, exposures to lead, and the other metals, found at the New Beginnings facility are not likely to result in adverse health effects.

Additional Notes

ATSDR acknowledges that other potential hazards related to environmental contaminants originating from the former refinery property may exist. As mentioned previously, questions related to these other contaminants, such as volatile organic chemicals associated with the former refinery will be addressed in additional health consultations.

Child Health Considerations

ATSDR recognizes that infants and children might be more vulnerable to exposures than adults in communities faced with environmental contamination. Because children depend completely on adults for risk identification and management decisions, ATSDR is committed to evaluating their special interests at the site.

Children could be especially vulnerable to site exposures because of the following factors:

- Children are more likely to disturb and ingest soil while playing onsite.
- Children are closer to the ground and thus more likely to breathe contaminated soils or dust.
- There are recreational and child-care facilities on or near the property (baseball field, daycares).

In this document ATSDR specifically addressed concerns related to the area where the New Beginnings facility is located. ATSDR has considered these factors in the development of conclusions and recommendations. Even though the facility is for adults it is probably that children will access the site, the contaminant found on this property do not pose a health concern to children or adults.

Conclusions

ATSDR used eight samples to draw conclusions about the New Beginnings facility. Four samples were collected on the New Beginnings property and four other samples were collected near the New Beginnings facility. All results of eight samples are below the health-based comparison values. Levels of lead and other metals found in the eight samples are not likely to result in adverse health effects (Table 1). Therefore, ATSDR considers the surface soil at New Beginnings facility will pose No Apparent Public Health Hazard to people working or visiting the facility.

Recommendations

The area is currently surrounded by deed restricted properties that were part of the former Amoco Refinery, these deed restrictions were implemented by City of Neodesha in response to sampling performed by the State of Kansas and RETEC. Therefore as a precautionary measure the adherence to surrounding deed restriction requirements should be evaluated before any soil disturbing work proceeds.

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References:

1. Bureau of the Census. 2000 census population: Profile of General Demographic Characteristics. Washington, DC: US Department of Commerce, 2000.
2. The Risk-Based Standards for Kansas (RSK) Manual. March 2003.
<http://www.kdhe.state.ks.us/remedial/download/RSK303.pdf>
3. Thermo Retec Consulting Corporation. Corrective closure as-built report: former sludge pond area, former Amoco refinery, Neodesha, Kansas. Project No: AMO62-15211-720. April 19, 2001
4. EPA Region 9, Preliminary Remediation Goals (PRGs). October 2005.
<http://www.epa.gov/region09/waste/sfund/prg/index.html>

TABLES

Table 1, Concentrations of Lead and Other Metals in the Surface Soil Samples Collected Adjacent to or Near the New Beginnings Facility^a.

Metal Sampled	ATSDR/EPA	KDHE Tier II (Residential) ^d	Sample #M-1 06/11/01	Sample #M-2 11/06/01	Sample #M-3 11/06/01	Sample #M-4 11/06/01	Sample #M-5 11/06/01	Sample #M-6 11/06/01	Sample #M-7 06/06/01	Sample #M-8 06/06/01
Lead	400 ^b	400	13.9	28.9	181	26.2	17.1	25.1	15.6	144
Other Metals										
Arsenic	20 (child) ^c 200 (adult) ^c	11	5.1	5.6	7.1	6.5	6.9	6.6	5.2	6.2
Barium	10,000 (child) ^c 100,000 (adult) ^c	5500	220	142	148	157	147	155	406	132
Cadmium	10 (child) ^c 100 (adult) ^c	39	N/D	0.77	5.1	1.6	0.86	3.9	0.31	2.5
Chromium	210 ^b	390	30.8	24	21	40.7	45.1	36.2	34.6	23.6
Mercury	23 ^b	2	0.017	0.0082	0.18	0.021	0.015	0.011	0.017	0.084
Selenium	300 (child) ^c 4000 (adult) ^c	390	N/D	N/D	N/D	0.85	N/D	N/D	0.85	0.56

^a Samples collected by RETEC (date of sample collection shown on table) (see reference 3).

All concentrations are in milligrams per kilograms (mg/kg). Sampling locations are shown in Figure 2.

^b EPA Region 9, Preliminary Remediation Goals.

^c ATSDR Chronic Environmental Media Evaluation Guide.

^d KDHE residential numbers were obtained from the Risk-based standards for Kansas (RSK) Manual [2].

Figure 1. Former Amoco Refinery showing property boundaries.

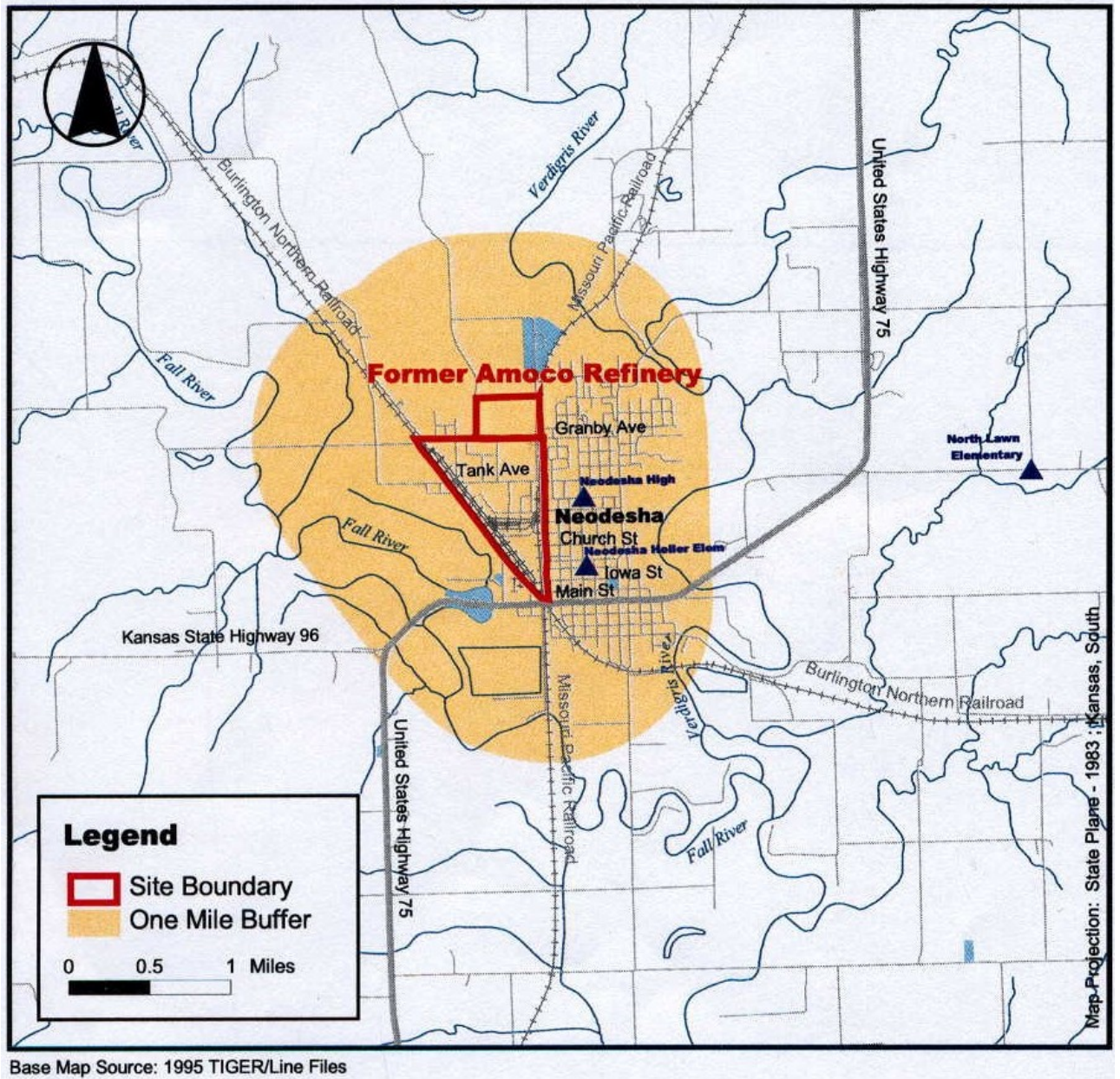
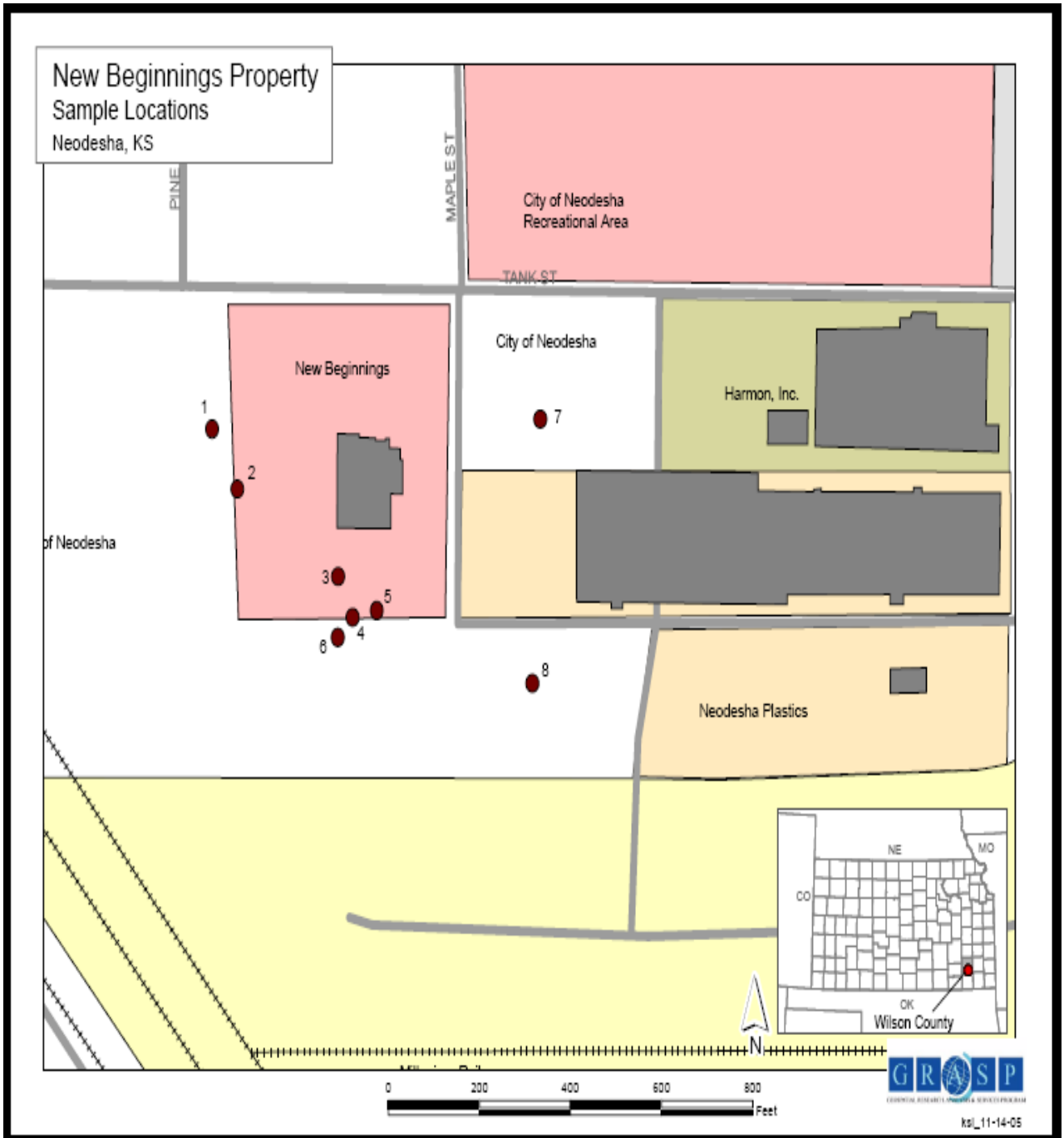


Figure 2. Soil sampling locations on the New Beginnings facility and nearby areas¹.



¹The soil samples evaluated in this health consultation were 1, 2, 3, 4, 5, 6, 7, and 8.