

## A Summary of Findings North Komelik, Tohono O'odham Nation

### Overview

The Agency for Toxic Substances and Disease Registry (ATSDR) works with other agencies, states, and local governments to assess health risks in communities where people may be exposed to (come in contact with) dangerous chemicals. This fact sheet summarizes findings from the Public Comment Version of ATSDR's Health Consultation related to environmental health conditions in North Komelik, near the Cyprus Tohono Mine Site.

#### The Bottom Line

- The drinking water Tohono O'odham Utility Agency currently provides to North Komelik is safe.
- Until 2013, North Komelik drinking water contained arsenic and fluoride at levels that could have harmed people's health if people drank it for 1 year or more.
- We don't have enough information to judge the quality of the air for people living near the site, so ATSDR recommends more testing. The Tohono O'odham Nation is starting some air monitoring.
- Locally-available animals and plants are most likely safe to eat, but to be sure, ATSDR would need to review site-specific data. Everyone should follow the recommendations included in this report about cleaning plants before preparing them to eat.
- There is not enough information to know whether a restart of copper mining operations could pose health risks to tribal members in the future. ATSDR recommends review of the proposed mining plan to forecast the health and environmental risks prior to restarting mine operations.

- The green dot means there is no expected health hazard.
- The red dot means that past exposure could put people at risk for a health hazard.
- The yellow dot means there is not enough information to know if there is a health hazard.

### History

The Cyprus Tohono Corporation (CTC) mine site is located 32 miles south of Casa Grande, AZ, in a rural part of the Tohono O'odham Nation (TON). It is 1 mile east of the village of North Komelik. The CTC and its holding company, Freeport-McMoRan Incorporated, have a 4,180 acre mining lease with the Bureau of Indian Affairs and the TON for this site. The US Environmental Protection Agency (EPA) is investigating groundwater contamination at the site.

Copper mining began on the site in the 1880's. Open pit mining began in 1959. In 1970, large-scale underground mining and processing of oxide and sulfide ores began. Open pit mining ended in 1997, and in 1999 the mine transitioned to care and maintenance mode. Past mining activities contaminated local groundwater with uranium, sulfate, and perchlorate. EPA is investigating options for cleaning up groundwater contamination. CTC is considering whether to resume mining activities.

## ***ATSDR Activities at the Cyprus Tohono Mine Site***

Representatives of ATSDR visited the Nation with EPA in September 2013 and spoke with TON officials and community members of North Komelik. Since then, ATSDR has been reviewing information about human exposures and possible health impacts at the site at the request of the EPA and the TON.

## **Community Concerns**

North Komelik community members and TON officials expressed primary concerns about:

- Drinking water
- Air
- Locally-available plants and animals used for food
- Effects to human health and the environment if the mine were to re-open

## **Health Consultation**

### **What did ATSDR do?**

ATSDR looked at:

- Groundwater data from 1980 - 2012
- Drinking water data from 1978 - 2013
- Mine site sediment data from 2002 and mine soil data from 2003
- North Komelik village soil data from 2003
- Studies from other parts of the country of animal and plant uptake of metals



The Cyprus Tohono Mine Site, near the North Komelik community.

### **What did ATSDR find?**

During our investigations, ATSDR collected detailed information about the community's and the TON officials' concerns. These issues are listed below — along with what we learned about them:

#### **Drinking water:**

- Up until April 2013, North Komelik drinking water contained levels of arsenic that could have posed a health hazard to adults and children.
  - During the time people drank this water they were at increased risk for non-cancer health effects of arsenic (see Box 1).
  - People who drank this water for more than 1 year may be at increased risk of developing certain cancers in the future (see Box 1).
- Up until April 2013, North Komelik drinking water contained levels of fluoride that could have caused cosmetic changes to children's teeth if they drank it for longer than 1 year.
  - Some amount of fluoride is good for teeth.
  - See Box 2 for health facts about fluoride and children's teeth.
- Arsenic and fluoride occur naturally in groundwater in the area.
- Starting in April 2013 the Tohono O'odham Utility Authority has been supplying drinking water to North Komelik from the Greater Santa Rosa Regional System. This drinking water is treated for arsenic and the source waters did not contain fluoride at harmful levels upon recent sampling. Thus, this drinking water is not expected to pose a current or future health hazard.

### **Box 1. Arsenic, Drinking Water, and Your Health**

*Using drinking water with arsenic above health guidelines at the levels that were in North Komelik water could have caused stomachache, nausea, and skin changes during the time people were drinking it. Even after exposure ends, people who drank water with arsenic above the health guideline for 1 year or more may be at increased risk of developing cancers of the skin, liver, bladder and lung in the future.*

*There is some evidence that ongoing exposure of children to arsenic in drinking water may result in lower IQ scores.*

*If you drank North Komelik water before 2013 for 1 year or more, talk with your doctor about your past arsenic exposure.*

#### **Air:**

- There are no data available about the air at the site or in North Komelik.
- The Tohono O'odham Nation is starting some air monitoring.
- If data on air become available, ATSDR will review them on request.

#### **Locally-available animals and plants:**

- There are no data available about the build-up of contaminants in local animals or plants, so as a comparison ATSDR reviewed findings of studies carried out in other locations about build-up of similar contaminants in the meat or liver of deer and in plants.
- Based on those studies, ATSDR believes that people who eat deer or collect plants from the Nation's lands are not likely to have harmful health effects.
- We emphasize that this is an assumption, and that we would need samples of North Komelik animals or plants to make a proper estimate of potential risk from eating local animals or plants.
- If data on contaminants in local animals or plants becomes available, ATSDR will review them on request.

#### **Possible environmental and health effects of re-opening the mine:**

- It is well known that mining operations change the environment.
  - Some changes, like noise, disturbances to soil containing the *Coccidioides* (Valley Fever) fungus, or changes to surface water, groundwater, or air, may contribute to health risks.
- There is not enough information right now to know if re-opening the mine could contribute to risks to health in the future.

### **Box 2. Fluoride and Children's Teeth**

*Fluoride is a compound that's found naturally in the environment. Many types of toothpastes contain fluoride because it helps strengthen teeth and prevent cavities. But drinking too much fluoride during the time teeth are forming (before 8 years of age) can cause visible changes in teeth like lines and spots.*



**U.S. Department of  
Health and Human Services**  
Agency for Toxic Substances  
and Disease Registry

## How can the North Komelik community protect their health?

There are things people in North Komelik can do to protect their health. Here's a summary of ATSDR recommendations:

- Drink the water the Tohono O'odham Utility Agency is now providing to the North Komelik community.
- If you drank North Komelik water before 2013, talk with your physician about your past exposure to arsenic.
- Use gardening and harvesting techniques that reduce the amount of soil and surface dust that get into your body, including:
  - Wear gardening gloves when gardening or harvesting.
  - Wash local plants with clean water and a scrub brush before preparing or eating them.
  - Wash hands after gardening or harvesting.

## What can other organizations do?

To make sure the North Komelik community is safe, ATSDR recommends that the CTC, TON, the Bureau of Land Management, the Bureau of Indian Affairs, and EPA take steps to:

- Test any new or existing groundwater wells for chemical and biological contamination before any future use as a human drinking water source.
- Collect baseline air quality data on particulates, volatile organic compounds (VOCs), and metals near the mine.
- Start air monitoring if mining restarts.
- Consider analyzing the potential environmental and health impacts of restarting mine operations with the goal of minimizing health risks.

## Where can I learn more?

The authors of the ATSDR Health Consultation document are available to answer your questions. You can contact them by telephone or email.

Ben Gerhardstein, Public Health Advisor, tel: 415-947-4316, [bgerhardstein@cdc.gov](mailto:bgerhardstein@cdc.gov)

Katherine Pugh, Environmental Health Scientist, tel: 770-488-0765, [khpugh@cdc.gov](mailto:khpugh@cdc.gov)

You may call ATSDR toll free at 800-232-4636.

The public comment version of ATSDR's Health Consultation is available at the two public repository locations listed below. You may also ask Ben Gerhardstein to send you a copy by email or postal mail.

### Sells Repository

Environmental Protection Office  
Tohono O'odham Nation  
Hwy 86 BIA Compound, Sells, AZ 85634  
(520) 383-8681

### Sif Oidak Repository

Sif Oidak District Office  
Casa Grande, AZ 85130  
(520) 361-2360

You may also access the public comment version of the Health Consultation at: <http://www.atsdr.cdc.gov/hac/pha/HCPHA.asp?State=AZ>.

## How can I give feedback on the report?

You can give comments on this version of the Health Consultation by sending written comments to ATSDR until March 6, 2015. Send your comments by email to ATSDR at [RecordsCenter@cdc.gov](mailto:RecordsCenter@cdc.gov), or by postal service mail to ATSDR Records Center, Attn: Rolanda Morrison, Re: Cyprus Tohono Mine Site, 4770 Buford Highway, NE (MS F-09), Atlanta, Georgia 30341.