ASBESTOS CEMENT WATER MAIN REPLACEMENT

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ENTECH ENGINEERING

READING | LITITZ | POTTSVILLE | MOUNTAINTOP | PITTSBURGH

References

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- http://water.epa.gov/drink/contaminants/basicinformation/asbestos.cfm
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- "Department of Environmental Protection Fact Sheet" Commonwealth of Pennsylvania, Department of Environmental Protection. Mar 06. 7 Feb 08. http://164.156.71.80/VWRQ.asp?docid=0442d740780d0000000005e0000005e0&context=2&backlink=WXOD.aspx%3ffs%3d0442d740780d0000800005db000005db%26ft%3d1

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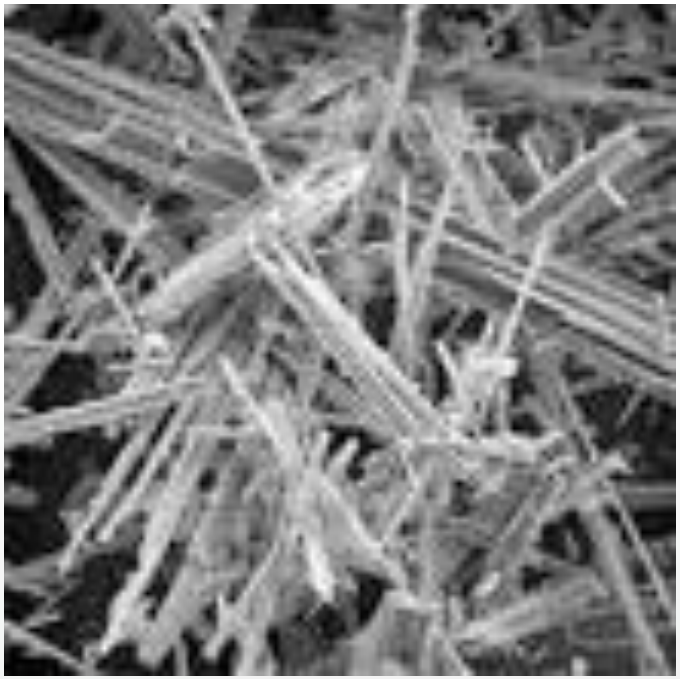
Section 1

GENERAL ASBESTOS INFORMATION

What is asbestos?

- Asbestos is a mineral fiber that occurs in natural deposits (rock and soil).

- Asbestos-containing products have been an important part of our society with **more than 3,000 products** including roofing materials, brake pads, and pipe.



Magnification of Asbestos Fibers

http://www.fs.usda.gov/detail/r5/landmanagement/resourcemanagement/?cid=stelprdb5363851

Section 2

AC PIPE IN OUR INDUSTRY

Distribution Network Pipe Material

- Constructed of material that is durable and corrosion resistant.
- Asbestos cement (AC) pipe became a viable option for water, wastewater, and storm drainage systems beginning in the mid-1940s.
- The presence of the asbestos fibers instead of reinforcing steel provided adequate strength with lower weight.

Is there still a lot of AC Pipe in service?

- A survey conducted by the American Water Works Association (AWWA) found that AC pipes constitute approximately 15%–18 % of the nation's water distribution and transmission systems.

- Communities that experienced significant growth during the 1950s and 1960s, however, constructed their infrastructure systems when the use of AC pipe was prevalent.

AC Failure Rates

- Under certain conditions, AC pipe has experienced failures at rates that are similar to other pipe types.
- Overall, however, studies have shown that the failure rate for AC pipe increases dramatically with age.
- Hundreds of thousands of miles of AC pipe are reaching the end of their 50-year useful lives and will need to be replaced soon.

Section 3

ASBESTOS EXPOSURE

How might I be exposed to asbestos?

- We are all exposed to low levels of asbestos in the air we breathe.
  - These levels range from 0.00001 to 0.0001 fibers per ml of air
    - Highest in cities and industrial areas.

- Drinking water may contain asbestos from natural sources or from asbestos-containing cement pipes.

What happens to asbestos when it enters the environment?

- Asbestos fibers can enter the air or water from the breakdown of natural deposits and manufactured asbestos products.
  - Asbestos fibers do not evaporate into air or dissolve in water.
  - Small diameter fibers and particles may remain suspended in the air for a long time and be carried long distances by wind / water before settling down.

- Asbestos fibers are <u>not able</u> to move through soil.

What happens to asbestos when it enters your body?

- When you inhale asbestos, the tiny fibers enter your air passages.
  - Your body's natural defenses remove most of these particles. The majority will be carried away or coughed up in a layer of mucus that protects your lungs.
  - However, some fibers may bypass those defenses and lodge deep within your lungs.

http://www.health.state.mn.us/divs/eh/asbestos/homeowner/heffects.html

Section 4

HEALTH EFECTS

How can asbestos affect my health?

- The Department of Health and Human Services (DHHS), the World Health Organization (WHO), and the EPA have determined that asbestos is a human carcinogen.

- Exposure to asbestos increases your risk of developing lung disease. That risk is made worse by smoking.
  - In general, the greater the exposure to asbestos, the greater the chance of developing harmful health effects.

- Disease symptoms may take many years to develop following exposure.

How can asbestos affect my health?

- Three of the major health effects associated with asbestos exposure are:
  - Lung cancer
  - Mesothelioma, a rare form of cancer
  - Asbestosis, a serious progressive, long-term, non-cancer disease of the lungs

Section 5

REGULATIONS / REPLACEMENT

EPA

- The EPA has delegated administration and enforcement of asbestos regulations to many of the individual states.

- Program administration often falls to a statewide department that enforces many environmental policies.

PA Regulations

- DEP's Air Quality Program has adopted and enforces the federal Environmental Protection Agency (EPA) 40 CFR Part 61 Subpart M, the **Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) regulations**, as amended on Nov. 20, 1990.

- Additional regulations exist for demolition and renovation of any building containing ACM in Philadelphia and Allegheny counties.

- Local municipal regulations may also exist.

PA Regulations

- PADEP regulates the removal, collection, transportation and disposal of asbestos-containing materials (ACM).
  - Should a project be subject to the NESHAP regulations, a minimum 10-day notification of the project is required to be made to both EPA and PADEP.

NESHAP

- Friable ACM is material containing more than 1% asbestos that, when dry, can be crumbled, pulverized or reduced to a powder by **hand pressure**.
- Non-friable ACM is material that, when dry, cannot be crumbled, pulverized or reduced to a powder by hand pressure. It is divided into two categories:
  - Category I
    - includes asbestos-containing packings, gaskets, resilient floor coverings or vinyl asbestos floor tile and asphalt roofing products.
  - Category II
    - includes any other asbestos-containing material, except Category I nonfriable ACM, such as transite siding shingles, **concrete-type piping** and other ACM concrete-type products.

NESHAP

- Regulated asbestos-containing materials (RACM) are:
  - Friable asbestos-containing materials (ACM);
  - Category I nonfriable ACM that has passively become friable by water damage, fire damage or weathering;
  - Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, drilling or abrading; and
  - **Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to a powder in the course of demolition or renovation operations.**

Pipe Replacement

- **260-foot Exclusion:** NESHAP includes an important exclusion for pipeline replacements.

- This exclusion allows single renovations of up to 260 linear feet or within a calendar year for nonscheduled operations.

NESHAP

- The crushing of AC Pipe (Category II Material) with mechanical equipment would cause this material to become RACM.
- The demolition and renovation provisions in 40 CFR 61.145 and the waste disposal provisions in 40 CFR 61.150 would apply.
  - Provided that the amount of pipe being removed and crushed is at least 260 linear feet for a single renovation project or during a calendar year for individual nonscheduled operations.

NESHAP

- The backfilling and burial of the AC Pipe in place would cause these locations to be considered active waste disposal sites.
- In order to avoid the creation of a waste disposal site, you want to consider other options.
  - If the pipe is left in place or removed in a way that is not crumbled, pulverized, or reduced to powder, it would not be subject to NESHAP.
  - If the pipe must be crumbled, pulverized, or reduced to powder, the facility should remove it from the site and transport it to a landfill which accepts asbestos waste material.

PA Regulations

- The Pennsylvania Department of L&I enforces the PA Asbestos Occupations Accreditation and Certification Act of 1990 (Act 194 and Act 161)
  - L&I requires a five-day prior notification for friable asbestos on indoor projects at regulated facilities.

Alternate Methods

- Avoid disturbing the existing AC Pipe with Parallel main installation.

- Sliplining, cured-in-place lining, fold-and-form lining, and similar techniques can be used.
  - # of service reconnections

Pipe Replacement

- Disposal is limited to 260 linear feet, or 35 cubic feet, of broken pipe.

- Cutting, grinding, or crushing the pipe must be performed while water is sprayed directly on the work area to control dust.
  - Broken pieces must be wrapped in water-tight bags and handled and disposed of as hazardous waste.

- Unbroken segments aren't classified as friable material and may be disposed of at Class II facilities.

Questions?

http://www.entecheng.com/services/municipal/

- Resources:

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