Soil: Tests unearth more questions

Continued from Page 1C

"Both levels are considered safe," Cahill said. "(The discrepancy) means we're bending over backwards to be on the safe side, but there are states that will do even more, such as New York."

The reason for the differences: Toxicology is a developing science that is continually being updated, Cahill said.

Manmohan Mehta, an environmental engineer with the Department of Environmental Conservation in Avon, N.Y., said the state took three years to develop its present standards after many people had reviewed them.

Toxicologists are finding new detection methods that can trace chemicals at levels of parts per trillion, an unheard-of measurement just 10 years ago, Cahill said.

"People think things are bright-banded issues," said James Gillett, ecotoxicology professor at Cornell University and a member of the advisory committee. "They're not. They're gray-banded issues, large bands with many shades of gray."

The differences in opinions about what levels are dangerous exist within the scientific community, Gillett said.

Scientists debate about the recommended levels of certain metals, such as copper, zinc and iron, Gillett said.

Some scientists would like to see the recommended levels for human consumption raised because of their nutritional value, while engineers with the EPA are pushing to get levels lowered because of their environmental impact, Gillett said.

"We're dealing with uncertainties," Gillett said.

What triggers cancer?

Because of the vast "gray areas," the state and federal government set environmental levels that are "very, very conservative," Gillett said.

The state Department of Health explains in its Aug. 22 report on Southside High School that researchers don't yet know enough about how cancer develops to determine at what amount chemicals become carcinogenic.

"There is insufficient knowledge of cancer mechanisms to decide if there exists ... a threshold level," the report states. "Therefore, every exposure, no matter how low, to a cancer-causing compound is assumed to be associated with some increased risk."

Just as there are several factors that work together to trigger the development of cancer in some people, there are several conditions that will affect whether a contaminant poses a health risk, said Claire Pospisil, a spokeswoman for the state health department.

The form that the compound is in, whether that form can be absorbed by the body, the amount and period of time that people are coming into contact with it and its effect on humans are just a few of the factors, Pospisil said.

"It's very, very complex," Pospisil said. "You can't generalize. It depends upon what we're talking about. A lot of contaminants we don't have a lot of information on the exposure to humans and the human reaction."

Studies on rats provide much of the basis for determining health risks from chemicals, Pospisil said. No one knows what information will actually translate into the human body, she said.

Soil test results

In May and June, more than 50 soil samples were taken from various locations on Southside High School property. In some samples, the substances listed below were found at levels higher than what would normally be found in the soil of residential neighborhoods.

This chart compares the highest levels of contamination found to cleanup levels recommended by the Environmental Protection Agency (EPA) and the Department (DEC). Levels are listed in parts per million (ppm).

Contaminant	Highest level found in soil samples (ppm)	EPA residential cleanup level (ppm)	EPA industrial cleanup level (ppm)	DEC cleanup level (ppm)	Normal uncontaminated levels (ppm)
Arsenic	56.2	0.37	3.3	7.5	2-20
Barium	611	5,500	140,000	300	200-400
Chromium	134	390	10,000	10	10-60
Copper	2,300	2,900	76,000	25	2-40
Lead	3,940	400	N/A	N/A	10-300
Nickel	761	1,600	41,000	12	<5-25
PAHs*	949.2	2,300	61,000	50	1-13
TCE**	110	N/A	N/A	0.7	N/A
Zinc	451	23,000	610,000	20	20-200
1248 Aroclor***	100	0.089	0.74	1	<.01-.04

The contaminants

ARSENIC is a known carcinogen. Inorganic arsenic compounds are used mainly to preserve wood. They also are used to make insecticides and weed killers.

BARIUM has not been classified as to its carcinogenicity to humans. Barium compounds are used by the oil and gas industries to make drilling muds for lubricating drill bits. They are also used to make paint, bricks, tiles, glass and rubber.

Some types of **CHROMIUM**, particularly the hexavalent form, are known carcinogens. Chromium is used in making steel and other alloys, furnace bricks, dyes, pigments, and in chrome-plating, leather-tanning and wood-preserving.

COPPER has a not been classified as to its human carcinogenicity. Metallic copper is widely used in the manufacture of electrical equipment. Copper salts are used as fungicides, components of ceramics and pyrotechnics, and for electroplating and other industrial applications.

Most **LEAD**, classified as a probable carcinogen, comes from human activities such as mining, manufacturing and burning fossil fuels. Lead is used in the production of batteries, ammunition, and metal products such as solder, pipes and roofing.

NICKEL and certain nickel compounds have been determined to be reasonably carcinogenic. Nickel compounds are also used for nickel plating, to color ceramics, to make batteries, and as catalysts to increase the rate of chemical reactions.

***POLYNUCLEAR AROMATIC HYDROCARBONS**, or PAHs, are a group of chemicals formed organic materials are burned. They usually exist as ash, cinders, charcoal or other burned materials. They are "reasonably expected" to be carcinogens.

****TRICHLOROETHENE**, or TCE, is used mainly as a solvent to remove grease from metal parts, but is also an ingredient in adhesives and paint removers. It has not been classified as to its carcinogenicity.

ZINC has not been classified as to its human carcinogenicity. It is mixed with other metals to make alloys like brass and bronze, and has many uses as a coating to prevent rust. Zinc compounds used to make paint, rubber, dye, wood preservatives and ointments.

*****1248 AROCLOR** is a Polychlorinated Biphenyl, or PCB, and is classified as a probable carcinogen. PCBs were used in fluorescent lighting fixtures, electrical appliances containing capacitors and hydraulic fluids. The manufacturing of PCBs stopped in the United States in 1977.

SOURCES: U.S. Agency for Toxic Substances and Disease Registry, Risk Assessment Information System, NY State Department of Health, Health Consultation August 2000 Star-Gazette graphic

Few answers after probe

For some Elmira residents, the state's reports simply created more questions.

"One of the problems that we face is that we have no idea how accurate these reports are," said Skip Mills, president of the Elmira Homeowners Association and the father of two students who attended Southside.

"I have my doubts about the reports," Mills said. "Certain things didn't sound right to me. I haven't been able to get answers to my questions."

Mills submitted to the advisory committee a two-page list of concerns, questions and suggestions that he had gathered from his family and community members.

"They are voicing their concerns and those of their neighbors about things that are mysterious to them," Gillett said of parents and community members who doubt the state's findings.

"It's really hard for people to say that the emperor doesn't have any clothes on," Gillett said, referring to the difficulty in informing parents, relatives and friends of cancer patients that the soil doesn't appear to have caused the illnesses.

Mills said he won't feel confident in the state's findings until he understands how the state conducted the tests and how state workers reached their conclusions.

That's exactly what the committee hopes to accomplish, said its co-chairman, Craig Slater, an environmental attorney hired by the city.

"We may come to the same decision (as the state), but it will be based on the most complete, well-researched information we can possibly get with the most highly trained and experienced people we can get looking at it."

Leaving no stone unturned

The committee has scheduled presentations with state officials, who will explain the process by which they came to their conclusions and will answer committee members' questions.

Meetings are scheduled for Nov. 13 and Nov. 27.

Additionally, the advisory committee has applied for technical assistance from the Northeast Hazardous Substance Research Center at the New Jersey Institute of Technology in Newark, N.J., to help interpret environmental data compiled by the state.

"If the committee continues the way it has — with diligence and thoroughness — then they come up with a safe verdict, I would have peace of mind," Mill said.

Mehta, of the conservation department, said that "very rarely" do people get second opinions on his department's findings, but he said he can understand the community's desire to do so.

Usually, it is the state acting as watchdog for communities by ensuring that large corporations clean up properties they are contaminating, Mehta said.

"We don't blindly trust what (the businesses) do," Mehta said. "We take our own tests.

"Environmentally speaking, if the site was bad, we would make sure it was cleaned up," Mehta said. "Up to now, we haven't seen a need for that at the school — unless the new tests show something different."

Committee meetings

State Department of Environmental Conservation officials will present the latest soil test results from Southside High School's playing fields to the Southside Advisory Committee on Monday, Nov. 13. The 6 p.m. meeting will take place in the school's library, 777 S. Main St.

State Health Department officials will explain the methods used in their cancer surveillance study of current and former Southside students at 6 p.m. Nov. 27 in the school's library.

All meetings are open to the public.