

A sample core is lifted from the bore. Operators wore gloves to prevent skin contact, avoiding contamination of the sample and providing for worker safety. (Photo: J.R. Roberts, Div. of Biological Sciences)

Carotte prélevée lors d'un sondage. Par mesure de sécurité, les ouvriers portent des gants pour éviter tout contact des PCB avec la peau et empêcher la contamination de l'échantillon. (Photo: J.R. Roberts, Division des sciences biologiques)

could contain traces of PCB's. When you realize that two adjacent test bores could differ in contaminant levels by a factor of ten thousand, it's easier to appreciate the significance of the word 'clean'."

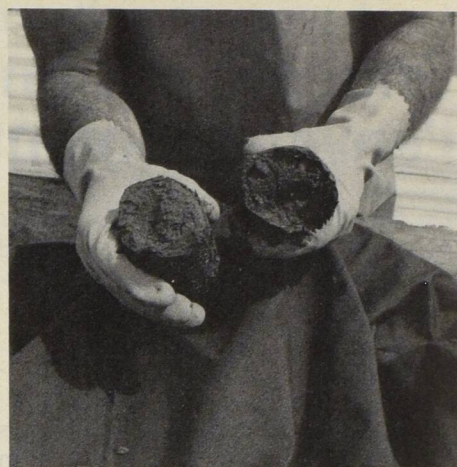
"A good field study requires that there is minimum effort in sample preparation, and relatively high accuracy at low contamination levels. Fortunately, at Regina we could use the analytical techniques recently developed in Canada for just such work."

A young Ontario firm, SCIEX Limited, had developed a line of trace atmospheric gas analyzers (TAGA) for use in detecting vapors given off by explosives, as well as for certain medical and environmental applications. The company had already established a mobile facility for air pollution analysis of hydrocarbons and they were requested to assist with the Regina investigation. Dr. Bruce Thomson, who led the SCIEX operation, comments: "This was the first time we applied our technology to soil samples and some new techniques had to be devised quickly. The mobile unit processed over 700 samples during a nine-day period. The experience was helpful to our development work, which receives support from IRAP (NRC's Industrial Research Assistance Program)."

When the Panel had outlined the distribution of PCB's at the site, they

could then proceed to assess the potential of the pollutants to infiltrate into the Regina ground water system. "PCB's in water don't produce instantaneous reactions in people," notes Gordon Butler. "Their effects are usually realized after exposure over a long period of time — usually many years. The Regina spill, while unfortunate, poses no *immediate* threat to the city water supply. Negotiations are now under way to find a suitable method of short-term containment of the polluted soil. Unfortunately, no operational program for the ultimate disposal of toxic chemical waste exists, and we have to do something better than simply relocate PCB-laden dirt."

Understanding the experience gained at Regina is a necessary first step in the development of an industrial waste strategy. "This investigation demonstrated just how little we really know about sub-surface pollutant migration," comments Butler. "Without a clearer knowledge, it is impossible to predict with confidence how pollutants move and interact with the environment. But the greater problem is how to dispose of society's accumulating waste. Some real work remains to be done in finding the most efficient and least expensive methods. PCB's, for example, *could* be disposed of by 'mineralizing' them in a high temperature furnace like a cement kiln. Many other workable suggestions have been put forward but have all failed to gain



Soil bores were broken by hand and the test sample taken from the centre to ensure purity. (Photo: J.R. Roberts, Div. of Biological Sciences)

Les carottes sont brisées à la main et seule la partie centrale est conservée pour les essais afin de garantir la pureté de l'échantillon. (Photo: J.R. Roberts, Division des sciences biologiques)

wide acceptance, in good part because of the politics of the issues." According to Butler the need is immediate since storage methods for wastes aren't uniform and, in many instances, are suspect. The Regina case was simply the tip of a very large iceberg, and policies must be formulated and implemented to deal with problems of such scope. NRC can make many contributions, but society, industry and government must combine forces to deal with the growing problem. □

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