WISCONSIN'S DIAMOND SIX-PAK

The name Kenosha, Wisconsin brings to mind a number of things - bratwursts, brewing, manufacturing, Lake Michigan, - but now, surprisingly, diamonds must be added to that list. Exploration by Canadian and U.S. mining companies has identified a buried diamondiferous pipe on the west edge of Kenosha. Drill core samples have been taken and analyzed, producing a number of interesting minerals and raising even more interesting geologic questions. The body is called the Six Pak diatreme, and underlies about 50 acres. The tale of exploration resulting in its discovery begins in 1994, when the company involved acquired air magnetic data for the region. They were able to pin point several anomalies known to be associated elsewhere with diamond-bearing bedrock. Once property rights were acquired to the Kenosha anomaly, drilling began. The first drill core struck diamond bearing rock.

Diatremes are formed by the powerful explosive eruption of gas-rich magma from deep in the earth. They form tapering pipe-like structures. Many consist of the rock kimberlite, but they can be formed of other rocks as well. The Six Pak diatreme consists of rock called lamproite, which resembles, but is geochemically distinct from, kimberlite. The upper part of the Six Pak diatreme consists of volcanic debris mixed with blocks of sedimentary rock. Deeper down, the sedimentary blocks become rarer, and the body consists mostly of dark fractured rock containing made of serpentine, calcite, and micas. Other rarer mineral found there include pyrope, chrome-diopside, picroilmenite, chrome spinel, zircon, apatite, rutile, barite, celestine, pyrite, galena and millerite. The pyrope, chrome-diopside, picroilmentite and spinel are known as diamond indicator minerals. When freed by erosion and dispersed in sediments, they can lead geologists to buried diamondiferous pipes. All of these minerals occur in sand-sized grains. Most interesting, however, is the occurrence of many tiny diamonds in the drill-core samples. These are sharp-edged, and dominated by the octahedron crystal form. Unfortunately, the size and quality of the diamonds do not make the Six Pak commercially viable to mine under current economic conditions.

The glacial drift of southern Wisconsin has been the site of finds of several impressive diamonds. These include the 3.34 carat Oregon diamond in Dane County, the 6.57 carat Saukville diamond of Ozaukee County, the 2.11 carat Burlington diamond of Racine County, the 21.5 carat Theresa diamond of Washington County and the 16.25 carat Eagle diamond of Waukesha County.

The small size of the diamonds in the Six Pak suggest that it was not the source of these larger diamonds. However, diatremes generally occur in

groups, so where there is one, there should be others. With so much of Wisconsin covered by glacial debris, who knows what may be out there? The find of the Six Pak will undoubtedly stir up more exploration, and help to answer that question.

- Dr. Bill Cordua, University of Wisconsin-River Falls

Reference:

Carlson, S.M. and G.W. Adams, 1997, “The diamondiferous Six-Pak Ultramafic Lamprophye Diatreme, Kenosha, Wisconsin,” Institute on Lake Superior Geology, Abstracts with Programs.