Summary of
Metal and PAH concentrations
in low bush blueberries

A Comparison of berries picked in Whitney Pier and North Sydney with supermarket samples of Ontario and Quebec berries.

Background:

In May 2001, the Joint Action Group (JAG) asked governments to arrange for testing of wild blueberries from Blueberry Hill, a favourite picking spot in Whitney Pier. Some members of the community had expressed concern over the safety of eating berries from this area, which is near the Coke Ovens.

Governments hired an independent researcher, Dr. Beverly Hale of the University of Guelph, to conduct the study. Dr. Hale specializes in the uptake of toxic chemicals by plants. Her study had three objectives:

- Determine the concentrations of metals and PAHs in all samples.
- Compare the concentrations in three sources (Whitney Pier, North Sydney and supermarket samples of Ontario and Quebec berries).
- Determine whether concentrations differed between washed and unwashed blueberry samples.

The Chemical Health Hazard Assessment Division of the Health Canada's Bureau of Chemical Safety also conducted a human health risk assessment based on the laboratory results to answer the question residents posed about the safety of eating berries.

Results:

All of the berries were safe TO EAT.

As would be expected in any sampling program, there were differences among the samples. Using extremely sensitive methods, the lab tests found that trace levels of selenium and zinc were higher in Whitney Pier berries than in those from North Sydney or the supermarket. Trace levels of thallium were higher in supermarket berries than in those from Whitney Pier or North Sydney. Levels of arsenic, vanadium, lead, copper, and molybdenum were similar in all samples. Chromium was not detected in any samples.

A subsequent risk assessment determined that none of the berry samples posed a risk to human health from exposure to metals.

While more than 100 different PAHs are known to exist, extremely sensitive tests found minute quantities of only two, pyrene and flouranthene, in a single unwashed berry sample from Whitney Pier. The PAHs in that sample were near the limits of detection.

No PAHs were detected in the washed sample from the same area. It should be noted that two values above the detection limit, out of the 594 analysed, could occur by chance alone.

A human health risk assessment using very conservative assumptions found no risk to human health from these minute quantities of PAHs. Indeed, the researchers concluded that a person would have to eat almost five pounds of blueberries per week, 52 weeks a year, for more than 70 years, before a potential health risk would occur.

Conclusion:

Dr. Hale and the risk assessment team concluded that that blueberries from all sources tested are completely safe to eat. That message was conveyed to the Chair of JAG in a letter dated August 7, 2003.

Summary prepared by: Health Canada & the Sydney Tar Ponds Agency

2 August 2004