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## Cadmium in Walrus - St. Lawrence Island

In mid-October 1986, the Epidemiology Office was notified by the U.S. Environmental Protection Agency (EPA) that high levels of cadmium had been found in samples of walrus liver and kidney. Samples were obtained by the U.S. Fish and Wildlife Service from walrus harvested on St. Lawrence Island and the Seward Peninsula. EPA provided a preliminary risk assessment, including a recommendation that walrus liver and kidney not be considered for consumption by humans or domestic animals. Because EPA has no authority over dietary contaminants, EPA turned this problem over to the Alaska Division of Public Health to determine future courses of action and health precautions.

Immediately upon receipt of the EPA assessment, we arranged to visit St. Lawrence Island in order to obtain blood and urine samples from residents who frequently ate walrus liver and kidney to determine if cadmium levels were elevated. On October 29-30, with the assistance of the health aides and public health nurse, we interviewed residents, selected individuals who, by history, had the highest consumption of walrus liver and kidney, and obtained blood and urine specimens. Specimens were sent to CDC, Atlanta, Georgia for analysis.

Walrus specimens tested by U.S. Fish and Wildlife came from animals harvested during 1981-1984. Levels of cadmium in walrus liver ranged from 1.4-50  $\mu\text{g/g}$  with a mean of 9.4  $\mu\text{g/g}$  and a median of 6  $\mu\text{g/g}$ . (Figure 1) Literature review and consultation with U.S. Fish and Wildlife professionals elicited additional data, including published reports of high levels of cadmium in fur seals (23-154  $\mu\text{g/g}$ , mean 56  $\mu\text{g/g}$ ) harvested from the Pribilof Islands in 1976, and reports of high cadmium in walrus harvested from the Siberian Coast in 1984.

Dietary histories obtained from St. Lawrence Island residents revealed that walrus liver was valued and eaten frequently, especially during harvest season. All individuals interviewed estimated consumption of liver to be not more than one-quarter lb/day; no individual reported eating walrus liver more than 90 days/year, and most estimated eating walrus liver not more than 30 days/year. Kidney was eaten by only a few who described infrequent consumption of small portions.

### Results

- No human illness due to Cd is known to have occurred among residents from consuming walrus.
- All blood and urine Cd levels were normal. (Figure 2)
- Urine beta-2-microglobulin levels were normal or slightly elevated--elevations are due to the high ages of those tested.
- The highest urine Cd level was four times less, and the highest blood Cd level was five times less than the critical level thought to be associated with kidney damage.
- Lifetime exposure of residents who have consumed walrus, including liver and kidney, has not resulted in excessive absorption of Cd.

### Conclusions

- Residents can safely resume their normal consumption of walrus.
- Additional studies should be undertaken to determine the source of Cd in marine mammals.



