Adak Island UPDATE

Results of Monitoring PCB Levels in Rock Sole and Blue Mussels

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Background

From 1999 through 2003, the Navy has been sampling a type of fish, rock sole, and a type of shellfish, blue mussel, in Adak's Sweeper Cove and Kuluk Bay. The purpose of this sampling is to see how much of a certain toxic chemical (polychlorinated biphenyls, or PCBs) these fish and shellfish contain. Rock sole and blue mussels were found to contain higher-than-normal levels of PCBs. This work is being conducted as part of the cleanup actions at Adak Island under the Superfund law. The Navy has worked with the Alaska State Department of Environmental Conservation (ADEC) and the U.S. Environmental Protection Agency (EPA) to advise Adak residents to limit their intake of some bottom fish and certain shellfish from Sweeper Cove and Kuluk Bay.

The sampling of rock sole and blue mussels meets the marine monitoring requirements of the Record of Decision (ROD) for Operable Unit A (OU A) at the former Naval Air Facility Adak. The ROD required that the level of PCBs in rock sole and blue mussels be monitored for a minimum of 5 years. The ROD set a PCB concentration of 6.5 parts per billion (ppb) as an "action level" for rock sole. The action level for blue mussels was set at 31 ppb. This fact sheet describes the results of the sampling of rock sole and blue mussels from 1999 through 2003. It also identifies the need for continued monitoring of PCB levels in these two species.

Figure 1 shows the locations of Kuluk Bay, Sweeper Cove, and the Bay of Islands, where the samples of rock sole and blue mussels were collected. Samples of rock sole and blue mussels were collected in the Bay of Islands to establish a "background" level of PCBs (meaning the PCB levels in an area unaffected by former Navy base activities). Rock sole (Figure 2) were collected from the three locations with bottom nets from a fishing boat (Figure 3). Blue mussels (Figure 4) were collected by hand along the shoreline.

In 1999, the Navy finished its cleanup of areas on Adak Island that could have been the sources of PCB contamination for Sweeper Cove and Kuluk Bay. Without PCB sources on land to release PCBs to these water bodies, PCB levels in rock sole, blue mussels, and other fish and shellfish are expected to slowly decrease over time.

PCB Levels in Rock Sole

The samples for the years 1999 through 2003 have been analyzed, and the results are presented here. Average PCB levels in rock sole from Sweeper Cove range from about 53 ppb to 96 ppb (Figure 5) over the sampling period. The average PCB level has increased each year and is above the action level of 6.5 ppb. Average PCB levels in rock sole from Kuluk Bay range from about 5 ppb to 14 ppb. Figure 5 shows that average PCB levels in Kuluk Bay rock sole are close to the action level. As expected, rock sole from the Bay of Islands (the area unaffected by Navy activities) have average PCB levels below the action level of 6.5 ppb.

Figure 1. *Areas of Rock Sole and Blue Mussel Sampling*

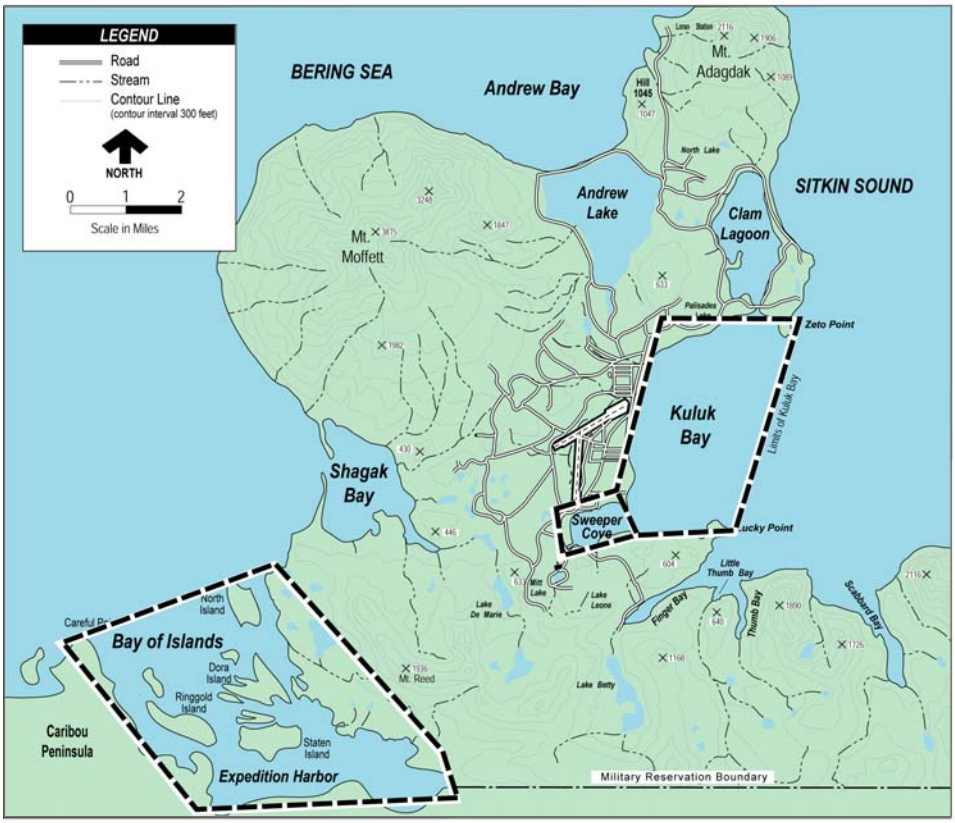

Figure 2. *Rock Sole*

Figure 3. *Fishing Boat Used for Marine Sampling*

Figure 4. *Blue Mussell Collection Along Shoreline*

PCB Levels in Blue Mussel

Average PCB levels in blue mussels from Sweeper Cove range from about 24 ppb to 61 ppb over the sampling period. Figure 6 shows that PCB levels in blue mussels from this area have decreased over time. Although the 2003 average PCB level was slightly above the action level of 31 ppb, future results are expected to be below the action level. Average PCBs in blue mussels from Kuluk Bay range from about 4 ppb to 17 ppb, which is below the action level.

Discussion

As expected, the highest PCB levels in rock sole were found in Sweeper Cove, which is closest to the former PCB sources on Adak Island. The reason that the PCB levels in rock sole in Sweeper Cove have increased from 1999 to 2003 is not clear. All known PCB sources on Adak have been removed, so sediment that enters Sweeper Cove and Kuluk Bay from the shore should be relatively "clean." PCB levels in rock sole may be increasing because PCBs build up in fish over time. PCBs in the fish are expected to decrease as clean sediment covers the existing sediment and new generations of rock sole inhabit the area.

The highest PCB levels in blue mussels are also found in Sweeper Cove, although the concentrations are decreasing. If this trend continues, the results of future blue mussel sampling may show PCB levels below the action level.

Fishing Advisory and Future Monitoring

The results of sampling rock sole and blue mussels from 1999 to 2003 have been used to decide what kind of monitoring of these species needs to be done in the future. The recommendation is to keep the fishing advisory in place for rock sole and blue mussels from Sweeper Cove, and rock sole from Kuluk Bay. The fishing advisory for blue mussels collected in Kuluk Bay is being removed because the average PCB levels are significantly below the action level of 31 ppb.

The Navy will continue measuring the levels of PCBs in rock sole and blue mussels from Sweeper Cove and Kuluk Bay every other year through 2009. At that time, the data will be evaluated and longer term monitoring requirements established. At the next 5-year review, the Navy will examine the need for continued monitoring in consultation with EPA and ADEC.

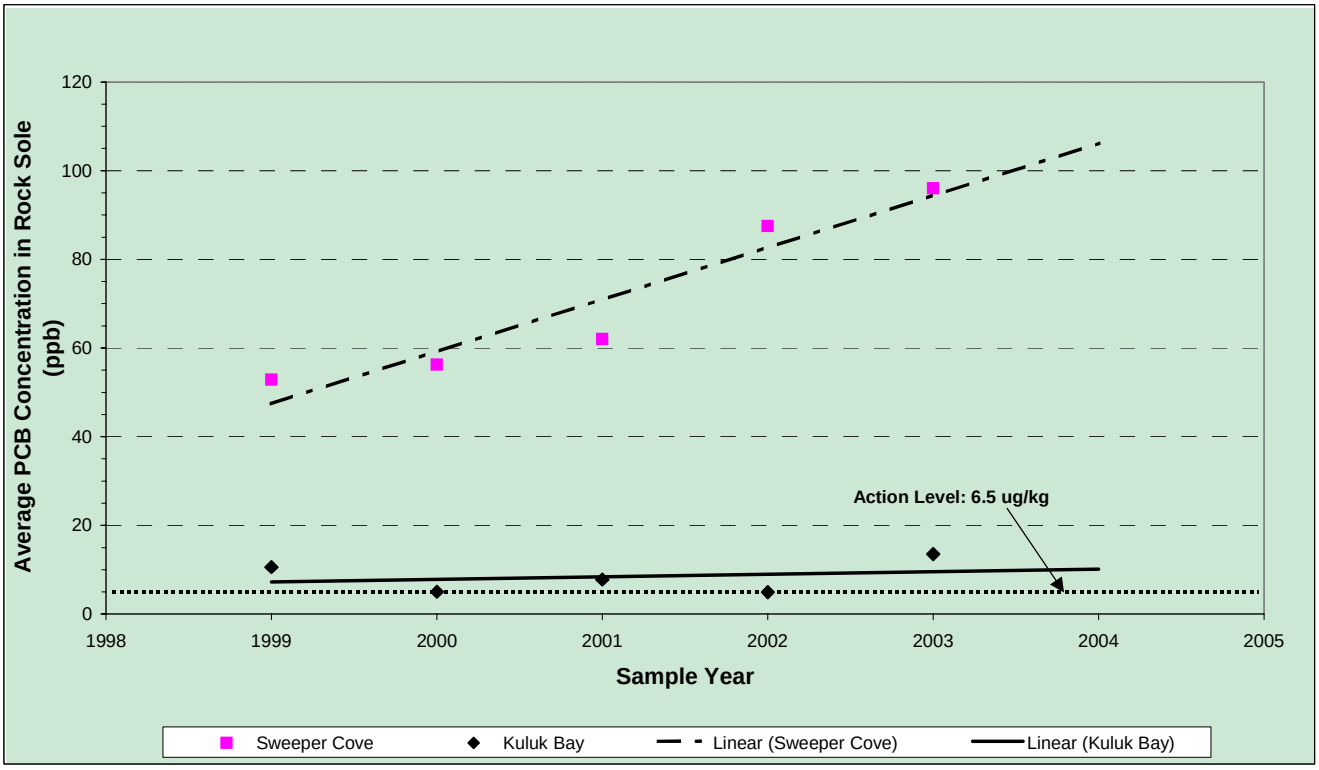

Figure 5. *Average PCB Levels in Rock Sole from Sweeper Cove and Kuluk Bay Since 1999, with Trend Lines Shown*

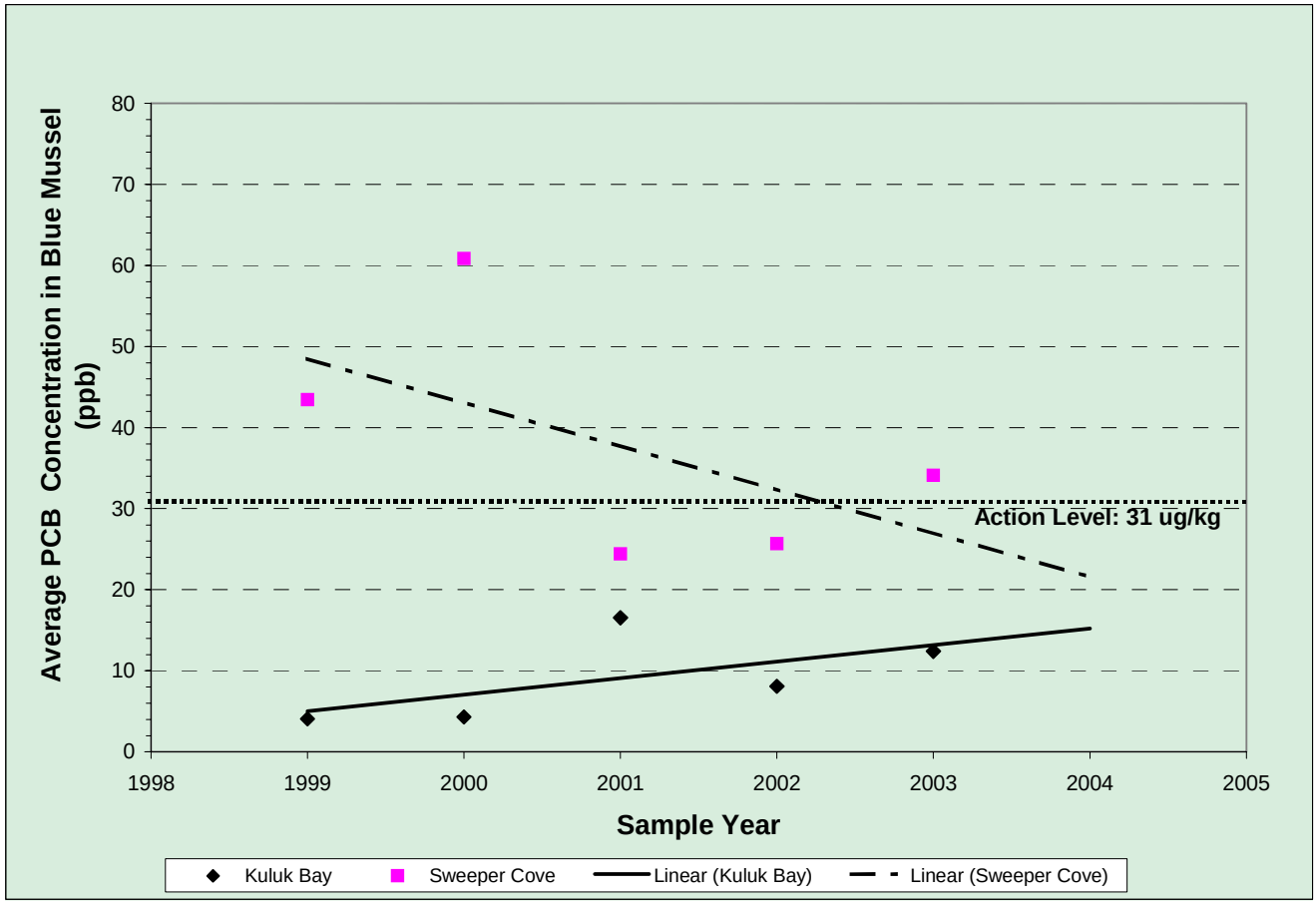

Figure 6. *Average PCB Levels in Blue Mussels from Sweeper Cove and Kuluk Bay Since 1999, with Trend Lines Shown*