



STATE OF  
WASHINGTON

Dick Lee Ray  
Governor

DEPARTMENT OF ECOLOGY

7272 Commuter Lane, Olympia, Washington 98501 206/753/2333

MEMORANDUM

WA-01-2010

December 7, 1977

To: Dick Cunningham

From: Shirley Prescott

Re: Asbestos Fibre Source  
Sumas River

The purpose of this study was to determine the source of asbestos fibres in the Sumas River.

Department of Ecology's Waste Water Inventory revealed no indication of a man-made source. However, we did have knowledge of an historical, 225 acre landslide area in the Swift Creek drainage.

Because of the continual sloughing in the slide area, silt deposits in Swift Creek, subsequent flooding and soil erosion, the Soil Conservation Service contracted for the services of Converse Davis Dixon Associates, Inc., geo-technical consultants, for their analysis of the Swift Creek drainage. While their interest was not particularly water quality oriented their geological analysis seemed to give us a place to start on the asbestos fibre problem in the Sumas River.

Quoting from the technical report of Converse Davis Dixon, "The tear-drop shaped landslide debris is a complex assemblage of several blocks of differing landslide mechanisms (blocks). The composition of each individual slide block varies. However, the majority are comprised of of a heterogeneous mixture of serpentine, till, and conglomerate boulders, in a sheared weak matrix of clay, glacial till, weathered serpentinite, rock flour, and fault guage." <sup>1</sup>

There are three principal polymorphic forms of serpentine: chrysotile, antigorite and lizardite. The most well known serpentine mineral, chrysotile, often occurs in veins of silky fibres and is the most important source of commercial asbestos. <sup>2</sup>

With this information to guide our study the following sampling stations were established, (map attached) and results are shown below:

|          | Station Number | Name             | Location           | Fiber Present | Stream Condition |
|----------|----------------|------------------|--------------------|---------------|------------------|
| 11/16/77 | 1.             | Sumas River      | Above Swift Cr.    | No            | Turbid           |
|          | 2.             | Sumas River      | Below Swift Cr.    | Yes           | Very turbid      |
|          | 3.             | Swift Creek      | Oat Coles Rd.      | Yes           | Milky            |
|          | 4.             | Swift Creek      | Goodwin Road       | Yes           | Milky            |
|          | 5.             | Breckenridge Cr. | Near Tom Rd.       | No            | Clear            |
|          | 6.             | Sumas River      | Near Telegraph Rd. | Yes           | Turbid           |
|          | 7.*            | Sumas River      | Near Sumas         | Yes           | Turbid           |

\* Routine Monitoring Station

This second sampling of these stations confirmed the results of the first. Fibre was present at all stations except 1 and 5.

Five hundred ml samples were taken at all stations, filtered through pore size 0.45  $\mu$  filters and microscopically examined for fibre presence. Because of heavy sediment at stations 2, 3 and 4 the samples were back filtered and rechecked.

Durham and Pang used the filter method on their asbestos fibre work in Lake Superior.<sup>3</sup>

A telephone conversation with the Soil Conservation Service office in Lynden does not indicate any immediate remedial action in the Swift Creek area. It appears that the local farmers and those persons most affected by the slide debris and flooding will have to institute whatever action is to be taken. Whether or not any of this would have an impact on the asbestos fibre getting into the Sumas River is unknown. Assuming the siltation could be controlled by sedimentation basins, etc., possibly the amount of fibre would be decreased but probably not eliminated.

SP:ee

## References

1. Converse Davis Dixon Associates, Inc.  
Final Geo Technical Report  
Swift Creek Tributaries  
Sumas River Watershed. January 1976.
2. Deer, Howie and Ziessman  
An Introduction to the Rock Forming  
Minerals. 1966.
3. R. W. Durham and T. Pang  
"Asbestos Fibers in Lake Superior".  
Water Quality Parameters,  
American Society for Testing and Materials,  
pp. 5-13.

