

# FISH AT RISK

## Hanford and the Columbia River

*Hanford Challenge advocates that an independent assessment of the Hanford Reach be conducted to ascertain the true state of the health of the river system at Hanford. The government must be held accountable for conducting a thorough and effective cleanup, and new waste should not be imported into already highly-contaminated and out-of-compliance radioactive landfills.*



### BACKGROUND

The Hanford Nuclear Reservation in southeastern Washington operated 9 plutonium production reactors on the banks of the Columbia River for nearly 40 years. In the process of making plutonium for use in nuclear weapons, the U.S. government turned Hanford into the nation's most contaminated site.<sup>1</sup>

Uncontained radiological and chemical contamination is migrating through the soils and groundwater at Hanford and leaching into the Columbia River, which runs through the middle of the 560-square mile reservation. Past and current discharges have dramatically impacted the health of the fish stock in the Hanford Reach of the Columbia, and future discharges place the Northwest's last remaining wild salmon spawning habitat at risk.

The Fish and Wildlife Service has noted that Hanford Reach fall Chinook is considered a critical "core population" that may re-colonize nearby tributaries and mainstem areas in the future. This population is of critical importance to Columbia River Treaty Indian subsistence and commercial fisheries as well as sport fisheries.<sup>2</sup>

*A 2002 EPA study found that risks of contracting cancer among tribal people from eating fish from the Hanford Reach were estimated as high as 2 in 100. Regulatory actions are often taken when a cancer risk exceeds 1 in one million.*

Between 1985 and 2001, the Hanford Reach produced about 16 percent of the Chinook salmon catch in Southeast Alaska, nine percent of the North British Columbia catch, seven percent of the Central British Columbia harvest, and ten percent of the West Coast Vancouver Island catch.<sup>3</sup>

### THE NATURE OF THE THREAT

**Radiological concerns from residual contamination** - These risks come from existing plumes of contaminated seeps and discharges into the Hanford Reach. For instance, strontium-

90 plumes at the N Area of Hanford are measured at thousands of times permissible regulatory limits. Past Hanford-sponsored studies have found that fish concentrate such radionuclides up to a factor of 1 to 170,000 (one part per million in the water will yield a bio-concentration of 170,000 parts per million in fish tissue.)<sup>4</sup> Contaminants entering the Columbia River at levels of concern include strontium, uranium, and tritium.

**EPA Columbia River Basin Fish Contaminant Survey** - This 2002 EPA study found that non-radioactive contamination, such as PCBs in Columbia River fish, are found at the highest levels in the Hanford Reach. The study concludes that Tribal children eating fish from the Hanford Reach have risks of immune diseases and central nervous system disorders that are more than 100 times greater than for non-Indian children. The risks of contracting cancer among tribal people from eating fish from the Hanford Reach were estimated as high as 2 in 100. Regulatory actions are often taken when the cancer risk exceeds 1 in one million.<sup>5</sup>

## THE NATURE OF THE THREAT CONTINUED...

**Hexavalent Chromium** – This chemical is present at very high-levels in some parts of the Hanford Reach resulting from past operations. Studies indicate hexavalent chromium can penetrate the membranes, gills and mouths of baby fish and concentrate in their livers, kidneys, spleens and body tissue. It can cause young fish to become lethargic, have problems breathing and die. High chromium concentrations in the riverbed's gravel can reach 150 to 200 parts per billion, with at least one hitting 650 parts per billion. Damage to health for fish starts at 11 ppb. A recent U.S. Geological Survey investigation found serious damage to the kidneys of Hanford Reach salmon it studied as a result of the hexavalent chromium exposure.<sup>6</sup>

## EFFECTS AND EVIDENCE OF CONTAMINATION

Hanford operations have affected Columbia River fish from past discharges. Plumes of radioactive and chemical toxins are entering the river on a daily basis, and even more is in the groundwater, destined for the Columbia. During the 1950's and 1960's, radioactivity from Hanford was found at high concentrations in shellfish at Willapa Bay at the mouth of the Columbia and extending for at least 200 miles into the Pacific Ocean.<sup>7</sup> At its height, the radioactive pollution made the Columbia River the "most radioactive river in the world." Willapa Bay oysters were contaminated with levels of Zinc-65 at 250 times that of Chesapeake Bay oysters, which were considered highly contaminated due to atmospheric fallout from nuclear weapons testing.

In the early 1960's, a Hanford worker set off radiation alarms entering the Hanford Site after eating oyster stew from a can. The oysters had been harvested from Willapa Bay, at the mouth of the Columbia, and were so hot that their consumption made the consumer himself radioactive.<sup>8</sup>

Dr. Allyn H. Seymour, director of the University of Washington's Laboratory of Radiation Ecology, reported that the radioactive material from Hanford could be traced all the way up the coast through the Strait of Juan de Fuca and into Puget Sound, but had declined rapidly since the last of the old plutonium-producing reactors at Hanford was closed early in 1971.<sup>9</sup>

## SOURCES

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5. EPA 910-R-02-006, Columbia River Basin Fish Contaminant Survey, 1996-1998, p. E-6.
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