



OREGON'S SHAME

AGENT ORANGE IN THE OREGON FORESTS Part One

By Roger Dorband

Aerial Spraying Regulations, Health Risks and Herbicide Contamination, the Oregon Forest Practices Act and 2,4-D.

YES, THAT'S RIGHT.

Agent Orange the defoliant used in the Vietnam War; good for the jungles of Vietnam, good for the forests of Oregon. And that's not anti-herbicide hyperbole or urban mythology. The two primary ingredients in Agent Orange, 2,4,5-T and 2,4-D, were used heavily in Oregon and frequently sprayed together for a ten year period, from 1969 to approximately 1979. 2,4-D, the lesser of the two evils, is still being used on our forests in the thousand of pounds each year.

2,4,5-T and 2,4-D are phenoxy herbicides, synthetic chemical compounds that kill broad leaf plants and some weeds but have little effect on conifers. Their early development began in the 1940s but it wasn't until their effects were scientifically established and they had been successfully used in agriculture that the U.S. military began to get interested and ran experiments of their own. It was especially after the advent of aerial delivery systems in the 1950s that the military began to get excited about the potential of phenoxy herbicides.

The Vietnam War became the perfect opportunity to use Agent Orange which got its name from the barrels painted with an or-

ange stripe in which it was transported. Evidence now shows that the military knew that this

mixture was potentially very harmful to human health, but, what the heck, it was being sprayed on the enemy.

Used between the years of 1962 and 1971, Agent Orange proved very effective in killing off wide swatches of jungle and coastal mangrove to better observe the whereabouts and movement of the Viet Cong. Unfortunately, within a few years after usage commenced reports began coming in of collateral damage. The farmer peasants of Vietnam reported increased miscarriages, birth defect, skin rashes and liver cancer, as well as the demise of some of their crops. Several of the same problems were later reported in Oregon after persistent use of 2,4,5-T by the timber industry.

In the mid sixties scientists from around the world began pleading with the US government to stop using Agent Orange which they saw as tantamount to chemical warfare. In 1967 a petition signed by 5000 international scientists including 17 Nobel Laureates was submitted to the U. S. Government under the Johnson administration. The answer they got back was, "Qualified scientists both inside and outside of the government have judged that serious adverse consequences (from Agent Orange use) will not occur."

Some of the effects of these chemicals didn't become apparent until the GIs came home from the war and began developing a panoply of health issues. Their wives also began having miscarriages and giving birth to children with deformities. Ultimately, a series of lawsuits brought against Dow Chemical, Monsanto and other companies who manufactured the toxic chemicals provided little solace and only meager compensation for the victims.

BRINGIN' IT ALL BACK HOME

The military officially quit using Agent Orange in 1971 due to overwhelming evidence that it could cause health problems. However, interest in the phenoxy herbicides continued to run high in the timber industry of the Northwest which saw their potential to suppress weeds, deciduous trees and brush which competes with fir trees for sunlight and nutrients. Herbicides were efficient too and cost effective because wide areas could be treated quickly at just the right time in the growth cycles and it was cheaper than hand release (cutting brush with hand tools). These same arguments are still used by the timber industry to justify use of herbicides such as atrazine, glyphosate (Roundup), and good old 2,4-D.

By 1969 Oregon seemed to be getting a reputation as an Agent Orange friendly place, or perhaps just a convenient out of the way dump site for the dangerous substance. A Beaverton waste disposal company wrangled 25,513 barrels, over a million gallons, of Agent Orange with a permit from the Oregon Department of Agriculture and struck a deal with Oregon's Department of Environmental Quality to deposit the barrels at a remote site along side of Alkali Lake in southeastern Oregon.

Predictably, within a few years the barrels began to leak, leaching highly toxic material into the soil and water table. The DEQ exacerbated the SNAFU by deciding to break up the barrels with a bull dozer and push them into an unlined trench where they were buried. Not suprisingly, the toxin material was then free to saturate the ground and begin traveling through the water table. Currently the material has traversed a half mile, resulting in one of the most highly contaminated waste sites in Oregon which to date the DEQ has not cleaned up.

Throughout the 1970s, when 2,4,5-T and 2,4-D were being sprayed on the forest lands of Oregon, there was research going on here as well. In 1970 two researchers from Oregon State

University published a study which concluded that 2,4,5-T was safe used in the forests because of its short life in the environment and because sustained exposure to large quantities of the herbicide were required to be hazardous to humans. More up to date research has since debunked both of these findings.

According to an article published in the Eugene Register Guard on June 25, 1976, Professor Michael Newton, an herbicide researcher at Oregon State University's College of Forestry had been working for several years on an informal basis with the U.S. Air Force and "was proposing that surplus Agent Orange be used for brush control on the Pacific Northwest timberlands rather than be destroyed."

In 1973-4 the Air Force shipped an undesignated amount of Agent Orange to Oregon which under the direction of Professor Newton was sprayed on a 350 acre forest plot in western Oregon, ostensibly to study the effect of dioxin, a contaminant associated with 2,4,5-T, on mountain beaver.

Although his effort to acquire the Air Force's surplus Agent Orange didn't come to fruition, Professor Newman, still considered by some to be a highly respected authority in forest management, has continued throughout his career to be a strong advocate of herbicide use in the forest. He became controversial when he concluded, after studies he did in Vietnam during the war, that Agent Orange plays no role in veterans' health issues.

BONNIE HILL, ECO-CHAMPION

The big problem with 2,4,5-T is its inevitable byproduct TCDD, the most poisonous of the dioxin series. An EPA spokesman describes TCDD as "the most toxic small molecule known to man." The agency proclaims that TCDD is so poisonous that there are "no safe levels" of the substance. In one study when laboratory monkeys were exposed to minute quantities of TCDD they died within a matter of weeks. TCDD is made particularly dangerous when aerially sprayed because of inevitable drift. Once in the soil or water it can remain for years.

Considered separately from their lethal sidekick, TCDD, 2,4,5-T and 2,4,D are known to be endocrine disruptors. In layman's terms they act like a growth hormone but send the wrong signals to the brain and reproductive system in humans. In broad leafed plants they spur growth so rapid that it kills the plant.

In 1979, Bonnie Hill, a 30 year old English teacher from the small town of Alsea in the Oregon Coast Range, had an epiphany while looking at some of the research on Agent Orange. In the late 1970s there had been a high rate of miscarriages in her community including one of her own. Not coincidentally there had been heavy applications of 2,4,5-T and 2,4-D, most often sprayed together at that time, on clearcuts in the general area.

Convinced that she was on to something, Hill worked tirelessly for two years interviewing women in the community, looking at statistics for miscarriages and collecting data on what had been sprayed on the forests near Alsea.

In 1978 Hill decided to go public with her concern. Although ultimately she would find at least 34 individual cases of miscarriages in her community, she focused on her own case and that of seven other women in a broad appeal to Oregon legislators and state agencies. Though no effort was made by the state to look into the Alsea miscarriages, to her great surprise her request for an investigation brought an onslaught of media attention including national television. The breakthrough for Hill and her seven Alsea neighbors came when the EPA sent representatives to look into the situation.

Everything Hill had reported was substantiated. Although no clear cut case of cause and effect could be established medically, the miscarriages all fell into a few month period in late spring within a relatively short time frame from nearby aerial spraying of herbicides.

For several years the EPA had strong suspicions about 2,4,5-T based on their own studies and reports out of Vietnam. The

high correlation of miscarriages to aerial spraying in Alsea were all they needed to enact a ban on 2,4,5-T. The 1979 ban was not considered permanent because no clear cause and effect could be demonstrated. Rather it was considered a precautionary measure taken in light of abundant evidence beyond mere coincidence.

Dow Chemical Company immediately discredited the ban by saying, "This is government at its worst, basing a hasty product suspension on data which has not been subjected to scientific review." In 1985 The EPA permanently banned 2,4,5-T. By that date the National Institute for Cancer Research had established clear data linking the herbicide with various cancers.

Bonnie Hill's activism, and the ban on 2,4,5-T she helped produce, not only kept millions from potential harm but also greatly advanced the national awareness of herbicide-health risks. Hill's activism stands out as an early example in Oregon of what a passionate and determined person can do to bring about change.

THE USUAL SUSPECTS

When attempting to determine the possible toxicity of the herbicides used today by the timber industry in Oregon we enter a Kafkaesque world of claims and counter claims, scientific studies that support the safety of herbicides and those that proclaim their harm.

Two detriments to establishing the truth about herbicides are the perennial lack of funding for their study and the lack of controlled research on humans. What researcher would subject a human to the toxicity of dioxin? (It should be noted that to date no chemical company representatives, timber barons, politicians who do their bidding, or anyone else who claims that herbicides are harmless has volunteered to stand in the middle of a clearcut while the helicopters are spraying overhead.)

An important reason for research discrepancies in very similar herbicide studies on animals is that different questions are asked by different researchers and data is looked at in different ways. Scientists for Dow Chemical working on rat exposure to 2,4,5-T found little difference between those rats exposed and a control group. Independent scientists looking at the same data noted a significant increase in skeletal abnormalities. In another study company scientists refused to say that phenoxy herbicides lead to birth defects which they defined as defects that "directly interfere with the ability of the offspring to survive." To them cleft palates and six fingered hands were too low of a bar.

It is common knowledge that companies which make potentially harmful products and the industries that use them may be blinded to the truth about those products by their bottom line. The lies are not always outright but

occasionally are; tobacco company lies, automobile recalls due to false claims. In 2009 the courts of France found Monsanto, the maker of Roundup, had lied about the product by telling consumers it was biodegradable and even cleansing to the soil.

Roundup is pertinent in this discussion because it is used heavily in the forests of Oregon. Since its launch in 1974 Monsanto's has maintained that there is no evidence that the product causes cancer. That was the EPA's position too until last year when Scientific American published an article citing a new study by the World Health Organization's International Agency for Research on Cancer.



Alsea, OR school teacher Bonnie Hill in the late 70's—her diligence enacted a ban on spraying.

Based on collated research of the ingredients in Roundup the IARC labeled the popular herbicide a "probable carcinogen" linked with non-Hodgkin's lymphoma and other cancers. A new study from Johns Hopkins University has linked Roundup with the epidemics in autism and obesity which correlate strikingly with the date that Roundup came into widespread use.

In 2015 the EPA audited the laboratory hired by Monsanto to test Roundup for toxicity in the 1970s and found "routine falsification of data." Another of their laboratories has also been charged with fraudulent practices in the testing of Roundup. In the face of current health lawsuits against the company, Monsanto has continued to maintain that Roundup is safe if used as prescribed on the label.

The EPA is now in the process of reconsidering their position on Roundup. Over 150 countries still sanction its general use but the balance is beginning to tip. It has either been banned or severely restricted in Argentina, Brazil, France and the Netherlands and Germany is pursuing a complete ban of Roundup in the European Union.

Samples of streams and waterways in 38 states by the U.S. Geological Survey have revealed that glyphosate, the main ingredient in Roundup, was in the majority of samples. Certainly there are huge question marks around the Oregon timber industry's wholesale use of the product.



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Atrazine and 2,4-D, both commonly sprayed on clearcut forest land in Oregon, have their own question marks. The scientific community is divided on the dangers of 2,4-D, which should not be misconstrued as Agent Orange when used without the banned 2,4,5-T. The World Health Organization's IARC has labeled 2,4-D a "possible human carcinogen", one notch down from the "probable" rating they gave Roundup. Cancer risk aside, we know that as a phenoxy herbicide 2,4-D has

the potential to cause problems with the endocrine system impeding the normal function of estrogen, androgen and thyroid hormones. Miscarriages, birth defects and interference with the development of children's brains are among its possible health risks.

Although the EPA approves the use of 2,4-D, by their own measure it is the most widely found contaminant in ground and surface water. This finding is particularly troubling because lab tests on animals show the greatest

health effects when 2,4-D is administered in low dosages over extended periods of time. Considered a health hazard for birds, 2,4-D is particularly toxic to fish.

This finding has huge implications for the fisheries of the Northwest where there is little regulation of herbicide spraying on private timber land. The Oregon Forest Practices Act's rules on private land allow for spray-

ing herbicides over inlets and tributaries that aren't in themselves fish bearing even though they feed fish bearing streams. It is ironic that the timber industry and Department of Forestry's emphasize the safety of herbicides if sprayed according to instructions on the label. The label on 2,4-D says explicitly that 2,4-D is toxic to fish and should not be applied directly to water or where surface water is present. Yes. That's right.

Australia has banned most use of 2,4-D after finding it in 90% of agricultural water sources bordering the Great Barrier Reef.

Atrazine has an added advantage over the phenoxy herbicides in that it inhibits the growth of broad leaf plants both before and after the crop has emerged. Like the phenoxyes it is also considered an endocrine disruptor with associated health risks to the reproductive system. The state of California is currently trying to have the herbicide banned for use due its reproductive health risks.

The California ban is being rigorously opposed in a law suit brought by Syngenta, the company which manufactures the product. They contend that atrazine is essential in agriculture and that there is no substitute for what it can do. According to Syngenta there have been over 7000 studies worldwide which show that atrazine is harmless to human health. In spite of Syngenta's claims atrazine was banned in the European Union in 2004.

We all should hope that Syngenta's claims are accurate now that Atrazine has been shown to be the most detectable herbicide in drinking water in the United States. It has also been found to be active for up to four years in soil and can migrate into ground water.

The EPA's statements on atrazine over the last 15 years have been slowly evolving. In 2003 they said it was "not likely" to cause cancer in humans. In 2006 they said rather awkwardly that it "poses a reasonable certainty of no harm." A year later they added that studies of atrazine show it to be an endocrine disruptor. As late as 2009 the EPA found that levels of atrazine would not cause reproductive defects in humans if applied according to the EPA's allowable limits.

In light of the proposed ban in California the EPA is again reviewing the data on atrazine. Based on remarks made by one of the scientists on the EPA advisory board it will be difficult to have full confidence in the agency's findings. Professor Deborah Cory-Slechta of the University of Rochester, recently said that, "The way the EPA tests chemicals can vastly underestimate risks. There is still a huge amount we don't know about atrazine."

To be continued next issue, when we'll consider:

- A Strange Brew. Rogue aerial sprayers may be mixing herbicides in unsanctioned combinations.
- Recent high profile examples of herbicide contamination of humans in Oregon.
- Why Oregon has been likened to the Wild West when it comes to aerial spraying of herbicides.
- The work of Beyond Toxics to bring change to the Oregon Forest Practices Act.
- An update on spraying of the clearcut adjacent to the home of Sam and Heather Chapman (Clearcut story featured in August Hipfish).

