

## Chapter 35

# Rounding the cusp

Public awareness of the pollution potential of aluminum smelters had changed by 1969 to growing alarm and calls for action by Montanans concerned about the Anaconda Aluminum Co. smelter. In a way, 1969 was a cusp marking a change for citizens who hadn't yet taken a stance, for investigators who stepped up their projects, for civic leaders who had a change of heart, for emission levels with the addition of two potlines, and for the aluminum company, which began to mount a legal and public relations defense while sinking millions of dollars into uncertain pollution control equipment. While the state continued to develop air quality standards for fluoride, the federal government organized investigations of resource damage in both the Flathead National Forest and Glacier National Park. The Hungry Horse News' top story for 1969 was increased awareness of pollution problems across the U.S. and evidence of increased fluoride levels in vegetation in Glacier Park, as reported by the Forest Service and the Montana Board of Health.<sup>1</sup> Meanwhile, AAC hired its own investigators and reported remarkably different results. A solution to AAC's problem existed, and it was possible company managers and engineers knew about the existence of improved reduction pot designs and dry scrubber systems. But those were expensive and time-consuming projects, and the company wasn't ready to take that big step in what turned out to be a decade-long process.

In 1969, AAC spent \$1 million to test and improve the Columbia Falls smelter's existing scrubber systems. Fluoride emissions eventually were reduced from 7,500 pounds per day in 1969 to 2,500 pounds per day by 1974. During that time, periodic tests showed that existing duct work for pot gases was adequate, that the maximum volume of gas which could be collected at the pots without burn-off was 600 cubic feet per minute, and that the burner design on the pot skirts for converting carbon monoxide to carbon dioxide could not be improved. By 1973, AAC had spent \$5.9 million on new pollution control equipment for the plant's 10 pot rooms. An additional \$1 million was spent for testing and research on pollution control efforts, and \$125,000 was spent on equipment used for testing and monitoring. Maintenance costs for the pollution control systems ran about \$1 million per year. The company spent \$229,200 widening the anodes to reduce heat and another \$600,000 computerizing two of the potlines. The new computer system monitored individual cell voltages and prevented "sick" pots by providing a more uniform operation. Sick pots tended to have more open skirt area, which allowed pot gas to escape into the potrooms and then through the clamshell roof vents into the outside atmosphere.<sup>2</sup>

## **Federal lands in jeopardy**

That was a lot of money and a lot of effort. The question that remained, however, was whether 2,500 pounds of fluoride emissions per day was harmful to the forested mountains east of the smelter – and in particular to Glacier Park, a popular tourist attraction and a crown jewel in the National Parks System. During the summer of 1969, the number of visitors to the Park increased 5% over 1968, and a record year was predicted.<sup>3</sup> The big concern for Park officials that summer was water pollution caused by inadequate sewage treatment facilities inside the Park. In early June, a water-testing laboratory for pollution control studies was set up at the Park's headquarters in West Glacier.<sup>4</sup> But the Park was also looking into AAC's fluoride emissions. In 1969, Glacier Park Superintendent William J. Briggie requested a formal study of the effect of fluoride emissions by the AAC plant on the Park's flora and fauna. The National Air Pollution Control Administration, of Durham, N.C., hired University of Montana botany professor Clancy Gordon to conduct the study. His study continued for several years, with some of his results and conclusions made public in 1972.<sup>5</sup> NAPCA was a predecessor to the Environmental Protection Agency.

Other groups and agencies, including the Anaconda Aluminum Co., also showed interest in studying the smelter's emissions. In January 1969, the Atmospheric Sciences Research Center in New York made a request to sample air around the AAC plant. In February, Glacier Park officials approved AAC's request to install a fluoride monitoring station inside the Park. In July, the Montana Division of Air Pollution Control reported that fluoride levels around the smelter could be potentially serious.<sup>6</sup> On Feb. 6, Glacier Park research biologist C.J. Martinka wrote a memo describing recent air pollution meetings that Martinka, Briggie and Park biologist Riley McClelland had held with AAC environmental manager A. Warren Hook. It was agreed that an ambient air quality monitoring station should be established in the Park.<sup>7</sup> Briggie met with Benjamin Wake, director of air pollution control for the Montana Board of Health, on Dec. 18 to discuss samples from Park vegetation that possibly indicated damage by fluoride emissions from the AAC plant. Wake strongly recommended that the Park request an investigation by NAPCA. Analysis of samples from the Park showed fluoride levels high enough to eventually produce 35 ppm in forage, the maximum level generally considered safe for consumption by animals. "We believe that, should fluorides continue at this level, damage to sensitive vegetation will begin to become visible," Briggie told the Hungry Horse News in Columbia Falls.<sup>8</sup>

On Dec. 19, 1969, Briggie wrote to National Park Service Midwest Regional Director Fred C. Fagergren about fluoride emissions impacting Glacier Park. "We are increasingly concerned about fluoride-contaminated air which enters Glacier National Park from the

west,” Briggle said. Briggle said he had met with Benjamin Wake one day earlier. “He stated categorically there is reason for great concern in the Park,” Briggle said. Wake found the Park’s findings surprising and noted that they indicated a level of fluorides that could be expected to produce forage levels in excess of 35 ppm. Briggle told Fagergren that damage to vegetation on Teakettle Mountain was already visible. He noted that damage to vegetation was “apparent and widespread near Columbia Falls,” and that “authoritative sources have attributed the damage to fluoride poisoning.” Wake had told him, “If present fluoride concentrations continue, he believes visible damage to Park vegetation could begin to show soon and would eventually penetrate deeper into the Park.” Several AAC officials had visited the Park on Dec. 10, including Hook and Bernard Kostelnik, counsel for the Anaconda Company in New York. “While they indicated an interest in a field monitoring system, they expressed opinion that no active threat to Glacier exists,” Briggle said. “Their opinion is not shared by this office and Mr. Wake.” Briggle recommended that NAPCA be asked to provide advice and to set up air quality monitoring systems in Glacier Park. “Evidence on hand leads to the inevitable conclusion that fluoride-polluted air is placing Glacier National Park in jeopardy,” Briggle said.<sup>9</sup>

On Christmas Eve, Wake released a report which stated that fluoride levels in trees in Glacier Park exceeded the 35 ppm level considered safe for animal forage and, if fluoride emissions were allowed to continue, “damage to sensitive vegetation will begin to become visible” in the Park.<sup>10</sup> “The value determined is surprising,” Wake said. Briggle strongly recommended that the National Air Pollution Control Administration be brought to Glacier Park to conduct more studies.<sup>11</sup> On Dec. 29, Hook called Briggle to talk about AAC fluoride emissions. Hook sought permission for AAC to set up an ambient weather device in Glacier Park. Briggle told Hook that the Park had asked NAPCA for assistance in dealing with the fluoride emissions. “Mr. Hook wanted me to confirm that there was no visible damage to the park vegetation, which I would not do,” Briggle reported later about the phone call. “For, as I advised him, the question was not whether there was visible damage but the fact that fluorides, if they continued above the present level, would have an adverse effect on Park vegetation, and that if we observe visible damage at this time, that it was already too late to save the vegetation.”<sup>12</sup>

The Forest Service also stepped up its investigations. In 1969, Flathead Forest officials requested help from Forest Service scientists in Missoula “to make a field evaluation of a problem on Teakettle Mountain that they suspected to have fluoride damage but weren’t really sure,” Forest Service plant pathologist Clinton Carlson recalled in a 1979-1980 legal deposition.<sup>13</sup> During the second week of June 1969, Carlson joined Paul Decelle, a Flathead Forest silviculturist, to look at sick trees in and around Columbia

Falls. Clinton inspected ponderosa pines and other trees in Pinewood Park and on the front lawn of the Hungry Horse News. The two men checked for damage possibly caused by fluoride emissions from the AAC plant, but they attributed much of the injuries to insect infestations called pine scale and to winterkill.<sup>14</sup> Six months earlier, on Dec. 27, 1968, bitter winter conditions had descended on the Flathead Valley, with temperatures as low as 23 degrees below zero and winds as high as 37 miles per hour at the AAC plant. Nearly 200 workers failed to show up at work over the next week because of car or road problems. Twenty of inches of snow fell between Dec. 23, 1968 and Jan. 3, 1969. For the record, the area had seen more severe blizzards but not lower temperatures for December. The thermometer at the AAC laboratory read 40 degrees below zero on Dec. 30, 1968.<sup>15</sup>

Carlson reported his findings in July 1969. He was not alone in his initial speculation about extreme weather harming area trees.<sup>16</sup> That same month, John Ulrich, a timber staff officer for the Flathead Forest, said a severe cold frost on June 13, 1969, had hit hard any new growth on larch and Douglas fir trees. The frost came during a record cold night for the area so late in the year. Ulrich predicted the brown needles would drop off and there would be additional new growth later in the year.<sup>17</sup> By Oct. 1, 1969, however, Ulrich had a different concern after conducting an aerial reconnaissance of potential impacts by smelter fumes from the AAC plant. "We estimate that approximately 1,100 acres have been heavily damaged primarily on the west side of Teakettle," he wrote. "An additional 1,900 acres of Forest Service land is showing light visible damage on the east side of the mountain. Mortality is very evident in the area that shows heavy damage."<sup>18</sup> The Forest Service announced in October that it was initiating a study of possible damage to vegetation in the Flathead Forest by fluoride emissions from the AAC plant. Carlson would head up the study.<sup>19</sup> Carlson established test plots in October for the study. Flathead Forest Supervisor J.M Pomajevich told the media that the full extent of the damage needed to be known before the Forest Service could take action. That action might include a claim for damages to trees inside the Flathead Forest, he said.<sup>20</sup> By mid-November, Carlson had received results from seven different vegetation samples he had taken on June 10, 1969, in the Columbia Falls area. The results indicated fluoride levels sufficient to cause death and higher than the tolerance level for most plants.<sup>21</sup>

In January 1970, Glacier View District Ranger Henry Hays pointed out in a letter that damaged timber on the west side of Teakettle Mountain was not commercially merchantable and damaged timber on the east side, while merchantable, was not ready for harvest. Hays said the Forest Service might decide to write off the loss in the same way it typically wrote off losses to fire, insects and winterkill.<sup>22</sup> In February, the Forest Service announced that a study conducted by Carlson and Forest Service entomologist

Jerald E. Dewey had found damaging levels of fluoride in trees and brush 10 miles north and east of the AAC smelter. Samples from the study were analyzed at the Wisconsin Research Foundation in Madison. Samples first collected near Columbia Falls in June 1969 were found to exhibit blight symptom and die-back on terminal portions of the plants. More than 3,000 acres of National Forest lands appeared to be affected by fluoride emissions.<sup>23</sup> By April 1970, the Forest Service was establishing test plots up to 10 miles away from the AAC plant for a new study of the impacts by fluoride emissions on insects, trees, fish and other wildlife. Dewey led a crew of four in the work, and Carlson joined the study in July.<sup>24</sup>

## **The regulation debate**

As public concerns about air pollution increased, support for state air quality standards and pollution regulations likewise increased. The standards and regulations were needed to enforce the state's 1967 Clean Air Act. In February 1969, the Kalispell Chamber of Commerce issued a public statement calling for air and water pollution control. The Chamber called for "enactment of strict state air and water pollution control standards... that must be goals, not immediate absolutes which could close down industrial plants capriciously, without regard for technological feasibility, or without regard for a given company's ability to finance installation of controls." The Chamber called for federal standards as well as financial incentives, such as tax reductions for pollution control. The effort to control pollution would be expensive, the Chamber acknowledged, "But this expenditure is worth making, particularly in light of the fact that polluted air and water already has cost vast sums of money." The Hungry Horse News found it interesting that "the men who represent the business community" had approved such a statement.<sup>25</sup> Air pollution talks by investigators and state officials continued through the year. Wake traveled to Kalispell to present a talk to the Society of American Foresters on April 3. Wake announced plans to install a dozen more air monitoring stations in the Flathead Valley, with two or three in or near Columbia Falls. He also planned to sample for fluoride emissions from the AAC plant with "an evaluation on vegetation as well as animals."<sup>26</sup>

Gordon traveled to Whitefish on May 23, 1969, for a talk on air pollution. Despite front-page coverage publicizing his talk in the Kalispell and Columbia Falls newspapers, only 35 people attended. Gordon was highly critical of fluoride emissions from the AAC plant, which he said would kill all the vegetation on Teakettle Mountain. Regarding AAC, Gordon told listeners "they are your problem" and "they are breaking the law." He pointed out that little was known about the effects of fluorides on humans and noted that affected animals ate vegetation that had absorbed fluorides and lived in highly exposed areas, such as Teakettle Mountain. Gordon described vegetable gardens

planted near the American Smelting and Refining Co. lead smelter in East Helena, Mont., that contained higher levels of toxins than permissible by the U.S. Food and Drug Administration. In one case, ASARCO had paid \$44,000 for a contaminated property worth only \$5,000, Gordon said. He also described angry ranchers near Garrison, Mont., who successfully fought a nearby phosphate processing plant which was emitting harmful fluorides. Gordon announced that a full study of the problem in Columbia Falls would begin in the summer of 1969 and continue into the spring of 1970.<sup>27</sup>

In June 1969, Sens. Mike Mansfield and Lee Metcalf joined with Rep. Arnold Olsen in announcing that Gordon had been awarded a \$31,438 grant to study air pollution impacts around Montana. The grant originated from NAPCA and was intended to support a three-year study of vegetation around Columbia Falls, the Missoula Valley, East Helena and Anaconda. Gordon explained that his studies would focus on accumulations of toxins in vegetation and animals that ate contaminated vegetation. Conifers would be studied the most because they were more sensitive to low concentrations of toxic gases, he said.<sup>28</sup>

An inevitable change in how the AAC fluoride emission story was reported in Columbia Falls became evident on June 6, 1969, when the Hungry Horse News described in an editorial the poor health of ponderosa pine trees in Pinewood Park and throughout the community. Ponderosa needles were brown and appeared dead, while needles on Douglas fir and most spruce and birch trees appeared healthy. "Whisper has the cause of unhealthy looking pines as the Anaconda Aluminum Co. plant and fluorides even though prevalent southwesterly winds are from the city toward the plant," the editorial said. One additional factor might be a lack of spring rain that would ordinarily cleanse trees as well as provide moisture, the editorial suggested while calling for answers from experts at the Flathead Forest.<sup>29</sup>

But Hungry Horse News publisher Mel Ruder took a big step in his Fourth of July issue when he put his byline on a front-page article attaching blame for the death of ponderosa pine trees around Columbia Falls to fluoride emissions from the AAC plant. "Bonanza of the Flathead, the Anaconda Aluminum Co. that provides jobs for 1,000 men and an \$8,500,000 annual payroll, threatens existence of ponderosa pine in this locality," he said. "Hundreds of ponderosa pine are dead or dying in and near Columbia Falls apparently as a result of fluorides. Most evident destruction of Montana's state tree is near the plant. Slope of Teakettle Mountain has thousands of dead trees, various species. Destruction is more evident since AAC plant capacity was increased last summer with completion of two potlines boosting production from 105,000 tons of aluminum a year to 175,000 tons."<sup>30</sup> Ruder took two positions simultaneously – blaming Anaconda while offering some alternative explanations, such as insect infestations. The

caption for the front-page photo of a ponderosa pine tree growing on the front lawn of the Hungry Horse News read in all caps “DOOMED,” and the editorial on page two called for the Forest Service to investigate the situation.<sup>31</sup>

A new report from the Forest Service pinned the blame on fluoride emissions, Ruder said. Based on investigations by plant pathologist Clinton Carlson, the report was signed by Forest Service entomologist Harvey V. Toko for Division Chief John Milodragovich at the Forest Service’s Region 1 headquarters in Missoula. The report cautioned that more study was needed and suggested that fluoride poisoning might weaken trees and make them more susceptible to injury by insects. Carlson had studied trees throughout Columbia Falls and as far away as the Kalispell golf course, about 15 miles from the aluminum plant, where trees were also dying. All species of trees within 200 yards of the aluminum smelter showed typical symptoms of fluoride poisoning. A small group of ponderosa pines about one mile west of the AAC plant had insect infestations. The ponderosa pines in Columbia Falls’ city park also had insect infestations. Many ponderosa pines throughout Columbia Falls showed symptoms of red belt, a physiological disorder common throughout Region 1 that might have been caused by the severe winter of 1968-1969. The trees on the Kalispell golf course were definitely not the victims of fluoride emissions, Ruder said.<sup>32</sup>

### **Christmas trees and lettuce**

In some cases, AAC wasted little time dealing with damages and quickly paid off claimants. In July 1969, Tom Little, manager of the Snowline Tree Co., reported that the company’s Christmas tree plantation was experiencing serious problems from air pollution. The plantation, located across the Flathead River from the Montana Veterans Home in Columbia Falls, held 90,000 trees ranging from two to four feet high. According to Little, many of the 50,000 Scotch pines showed some yellow needles in 1968, but by mid-1969 the trees were “definitely in trouble.” The 30,000 Douglas firs had also turned yellow-brown and were losing needles, but the Colorado blue spruce and Mugho pine trees were doing much better. Little said he believed fluoride emissions from the AAC plant were damaging the trees.<sup>33</sup>

On July 18, the Hungry Horse News called for local residents to show an interest in air pollution control in the Columbia Falls area. “It’s obvious that Anaconda Aluminum Co. plant fumes have killed hundreds of trees on and near Teakettle Mountain,” the editorial said, citing a lawsuit brought against the AAC plant by the Snowline Tree Co. for damage to its Christmas tree plantation. The newspaper warned about false charges being made against the AAC plant. The plant did not pollute water – its sewage treatment facilities were deemed excellent by the state health department. Charges that the AAC plant did not try to control air pollution also were false – the plant had

installed pollution control equipment from the very beginning and spent millions of dollars since then. But the newspaper was critical of how the AAC plant handled the problem – by not informing the public and by purchasing damaged land. “Purchasing more than 2,000 acres is not pollution control, but an admission of the problem,” the editorial said.<sup>34</sup>

On Aug. 20, 1969, Kalispell attorney James Oleson wrote to Clancy Gordon about the Christmas tree plantation. Oleson said Little had several acres of trees in the Columbia Falls area that were dying from air pollution and Little wanted to offer “mutual aid” to Gordon in his investigations of the AAC emissions.<sup>35</sup> Then on Dec. 12, the Hungry Horse News reported that AAC had purchased Little’s plantation, which was six miles away from the smelter in an opposite direction to prevailing winds.<sup>36</sup> The newspaper confirmed rumors that AAC decided to anticipate the future market value of the plantation’s trees and purchase the land. The company also purchased land owned by Snowline east of Kalispell.<sup>37</sup>

While the focus of investigators looking at fluoride impacts in the Columbia Falls area was on injured trees and animals that ate plants with high levels of fluoride, there were some human health concerns. In August 1969, Joe C. Elliot, an associate of Gordon’s, warned Columbia Falls residents not to eat home-grown lettuce because of possible health risks caused by fluoride emissions from the AAC plant. Elliot had collected samples of lettuce grown in Columbia Falls and tested them at the University of Wisconsin Alumni Research Foundation using federal grant money. The test results showed fluoride levels of 35 ppm, three times the maximum level accepted by the Montana Board of Health. The Wisconsin laboratory also found high levels of fluoride in needles from ponderosa pines growing in the Columbia Falls area. Scientists at the AAC plant were conducting their own tests of the adverse effects of fluoride on vegetation and cattle in response to Elliot’s claims.<sup>38</sup>

On Aug. 22, an AAC spokesman citing company scientists called the allegation about hazardous fluoride levels in lettuce “bordering on the absurd” and so basically erroneous that it amounted to “scare tactics.” AAC scientists pointed out that Elliot used a fluoride standard developed for cattle, not humans, and that cattle typically ate 30 to 40 pounds of vegetation per day. According to Michael Treshow, a fluoride expert at the University of Utah, a human would have to eat 10 pounds of fluoride-tainted lettuce every day for 10 years before he would be concerned about the person’s health. AAC expressed a desire to meet with Gordon to see how the botanist conducted his tests. In response, Elliot said produce was less affected by fluoride emissions when grown further away from the AAC plant, and he repeated his warning that locally grown lettuce should not be eaten.<sup>39</sup> While AAC’s point about how much contaminated lettuce a



human needed to eat before being harmed raised questions, there was less doubt about the fluoride levels found in the locally grown produce. On Feb. 17, 1970, Gordon sent Wake a bill for tests on fluoride concentrations in plant and animal samples gathered in the Columbia Falls area in 1969, including lettuce from people's gardens and trapped rodents. The bill for lab analyses by the Wisconsin Alumni Research Foundation lab was \$1,700, and the total bill came to \$4,353.<sup>40</sup>

By summer 1969, public concerns about fluoride emissions from the AAC smelter began to show up in letters to the Hungry Horse News. On July 18, 1969, Dr. and Mrs. Conrad P. Reslock, summertime residents of Columbia Falls, wanted to know what steps the company was taking to stop further pollution, in addition to paying property owners for damages. They wanted to know what kinds of investigations were underway by both the company and the government to find out if fluoride emissions posed a health threat to humans.<sup>41</sup> On Aug. 29, 1969, Lestor E. Darling, a Forest Service employee for 30 years, described the impact of fluoride emissions on trees in the area. "Grey death has crept to the top of Teakettle and is slowly spreading north and west," he said. "It did most of this damage with two potlines running. With five in production it's going to get much more severe. It is drifting up through the canyon into the park. It hangs along Columbia (Mountain) as far south as Blaine Mountain. Trees, shrubs, etc. are dying in and around town, to the north of us a pall of this hangs over our open water supply." Darling compared the future of the area to other smelter towns. "How long will it take for this area to turn into the drab lifeless look of Trail B.C., Garrison, Butte or Kellogg, Idaho?" he asked. Darling also was critical of how AAC dismissed warnings by environmentalists. "I don't believe that any of these statements that appear in the H.H. News 'border on the absurd' or suggest the employment of 'scare tactics,'" he said.<sup>42</sup>

On Sept. 5, 1969, Jack Holterman, a teacher in Whitefish, criticized AAC for its emissions. "Oh, how my heart bleeds for Anaconda," he wrote. "To think that some people should try 'scare tactics' on such a venerable institution! To think they should try to confuse us with scientific facts!" Holterman reminded the public of the Anaconda Company's past. "Why, if any of these critics doubt for an instant that Anaconda creates the good life, let them recall what a paradise Butte was 20 or 30 years ago," he said. "No trees to clutter the horizon, no flowers to waste people's time on! Just a nice, cozy drab-grey filthy world: the Flathead of the future!"<sup>43</sup> On Oct. 3, 1969, Hubertine Mog of Los Angeles described traveling through Montana and finding "the worst case of air pollution I had seen outside of Los Angeles" upon reaching Columbia Falls. "At first I thought a forest fire must be raging and eating away at your beautiful forests," Mog wrote. "However, upon inquiry I found that the Anaconda Copper Mining Co. was responsible for this ghastly condition. Why do the people of Columbia Falls put up with this menace to their health? Does Montana not have laws governing industrial pollution?" Mog wanted to

know why nothing was being done about the problem. "With all the technology available to industry today, there is no excuse for a company to behave irresponsibly," Mog wrote. "I see no reason why the good people of Columbia Falls, Montana, should suffer when the culprit is easily identified."<sup>44</sup>

On Nov. 21, 1969, Charles K. Green questioned statements made by AAC about its air pollution control efforts. "We who have lived in the Hungry Horse Valley have watched all the green trees on the west side of Teakettle Mountain die from the poison fumes generated by the plant in spite of assurances by the Anaconda Company when they began building, of the most modern methods of reduction they planned would leave our air uncontaminated," Green wrote. "We still felt confident this same mountain would force the fumes high in the air, to dissipate over and beyond us. Such is not to be." Green went on to describe a bull elk recently found with all its teeth loose, and made a reference to Rachel Carson's book "Silent Spring" in describing the effects on the area. He concluded by doubting that because of "the form of state government we have so open to graft, the company can ever be forced to clean our air."<sup>45</sup> On Nov. 28, Marilyn Hays wrote to state her agreement with earlier letters by Stephen Hogard and Hubertine Mog and also in support of Clancy Gordon. Hays worried about the future of Pinewood Park with all the ponderosa pines dying from fluoride emissions. In his letter to the editor about the air pollution, William Frishkorn quoted the prophet Isaiah from 712 B.C. about pollution: "The earth also is defiled under the inhabitants thereof; because they have transgressed the laws, changed the ordinance, broken the everlasting covenant."<sup>46</sup>

Some residents wrote instead to Gordon at the University of Montana. On Aug. 26, 1969, Rose Huffman said she and five women from a neighborhood near the smelter had asked to meet with AAC personnel about Gordon's findings on fluoride concentrations in vegetation, rodents and ponderosa pines. She said they went to the plant on Aug. 20 and met with A. Warren Hook, the company's environmental officer, along with a chemist from the plant. "They explained there was no harm from this plant to the valley, as the amount of fluoride they used was below the safe limits," Huffman said. "They admitted to being a bother only, in the fact that any industry next to homeowners did lower property value." Huffman asked Gordon for advice.<sup>47</sup> Gordon's assistant Arlene Dahl, responded to Huffman on Sept. 4. Dahl provided contact information for the grassroots organization Gals Against Smog and Pollution and then gave her own opinion about AAC. "The officials of the Anaconda Aluminum Co. will not feel any need to improve their control equipment unless the community demands it," Dahl wrote. "To be successful in changing the smelter's operation, the impetus must come from the community, not from outside."<sup>48</sup>

On Nov. 4, 1969, Whitefish resident Sharon Morrison wrote to Gordon to express concerns about air pollution in Montana. She said her family recently had moved to the Flathead.<sup>49</sup> Morrison's husband, Frank Morrison, later represented Columbia Falls area property owners who sued AAC for damages caused by fluoride emissions. He also served as a Montana Supreme Court Justice from 1980 to 1987 and twice ran for governor. Gordon responded to Sharon Morrison's letter on Dec. 2 by briefly describing his studies of fluoride from the AAC plant conducted in 1967, 1968 and 1969, noting that the data was sent to the Montana Board of Health and NAPCA.<sup>50</sup> On Nov. 10, Jack Holterman wrote to Gordon seeking information about air pollution by the AAC plant and Gordon responded.<sup>51</sup>

## **Science vs. industry**

With passage of a Clean Air Act in 1967, the state turned to establishing air quality standards for a wide variety of industrial and other forms of air pollution. By 1969, much of the regulatory work had been completed for the timber industry, and the state turned to fluoride emissions by the AAC plant in Columbia Falls. On Sept. 19, 1969, Benjamin Wake told the Montana Board of Health and the Montana Air Pollution Control Advisory Council that steps were being taken by AAC to address air pollution problems. Wake said that in his opinion the death of ponderosa pines in the area was a result of fluoride emissions from the aluminum smelter, but other harmful factors could include insect infestations and winterkill. Wake pointed out that the amount of fluoride emissions in the air exceeded the state's proposed limit of 35 ppm for forage, a standard that he predicted would be in force by 1971. He said the situation at the AAC plant was "a thousand times more difficult than at Garrison." Fluoride emissions from the AAC plant were impacting vegetation in Glacier Park, Wake said. "Something needs to be done," he said. "Everyone agrees. Question is how. Every aluminum plant has the problem." Frank Laird, head of the Anaconda Company's environmental control department and a member of the advisory council, acknowledged that the "aluminum industry has a problem with fluorides and many people are working on it." Wake described a \$9 million wet scrubber system used in the state of Washington that froze up during the cold 1968-1969 winter.<sup>52</sup>

On Oct. 14, 1969, Wake spoke to 36 industrial, business and professional people at a meeting of the Columbia Falls Chamber of Commerce about air pollution in the Flathead Valley. Much of his talk was about emissions by timber mills and weather inversions common to western Montana's mountain valleys. As for fluoride emissions from the AAC plant, Wake said the situation was "1,000 times more difficult than at Garrison, which we are on top of." In addition to fluoride, the AAC plant was responsible for harmful coal tar pitch emissions, he said.<sup>53</sup> The fluoride and coal tar pitch emissions

were serious, he said, and both AAC and the state health department knew the situation needed to be corrected. Reaction by the audience ranged from “a good talk, glad to have the information” to “he’ll drive local industry and jobs out of Columbia Falls” and “he’ll put us out of business.” As the Hungry Horse News pointed out in an editorial, “What should be realized is that Montana’s clean air regulations are in line with what is being adopted nationwide. Control of pollution may be delayed, but it has to come.”<sup>54</sup>

The Anaconda Company turned to AAC Vice President Richard Steinmetz Jr. for a defense to the fluoride emission allegations. The Hungry Horse News published his lengthy statement on its front page on Nov. 24, 1969. Steinmetz noted that AAC had consulted other aluminum-producing companies since they all faced a common problem – how to control fluoride emissions – and he pointed out that the company had spent \$13 million on air pollution control systems since the aluminum smelter began operating in 1955. The company spent \$200,000 in 1969 on engineering studies, consultants and tests of new technology in hopes of finding a solution to the problem. Steinmetz acknowledged that trees which grew in the vicinity of the plant belonged to certain species that were vulnerable to fluoride. “It seems appropriate to observe that Teakettle Mountain has not been blessed with lush foliage since 1929 (when major fires occurred), although the proximity of the plant to it in recent years has not been a favorable factor,” he said. Steinmetz noted the contribution the plant had made to the local economy in terms of employment and taxes but added, “Regardless, AAC does not consider its contributions to the Montana economy as a license to befoul its environment.”<sup>55</sup> Steinmetz also said visitors to Glacier National Park “will find no impairment of their enjoyment of the natural attractions of the park,” and played down the possible impacts of fluoride emissions from the AAC plant on trees in the Park.<sup>56</sup>

Steinmetz cited in full the declaration of policy in Montana’s Clean Air Act and then applied it piece by piece to AAC’s emissions. First, regarding “human health and safety,” AAC took the position that emissions from the Columbia Falls plant did not pose a threat to human health and safety. Second, regarding “injury to plant and animal life and property,” Steinmetz pointed out numerous other factors that could have affected plant life – recent droughts, extreme winter cold, insect infestations and the 1929 forest fire that swept over Teakettle Mountain. As for animal life, AAC had sent experts to inspect more than 200 head of local cattle, with no harmful results found. Third, regarding “the comfort and convenience of the people,” Steinmetz pointed out that the haze that hung over the plant resulted from hydrocarbons, not fluoride emissions, and much of those hydrocarbons came from burning at the nearby city dump and were trapped by weather inversions. Fourth, regarding “the economic and social development of this state,” Steinmetz acknowledged that AAC’s contribution to the state’s economy did not give the company a “license to befoul its environment.”<sup>57</sup>

Fifth, regarding “the enjoyment of the natural attractions of this state,” Steinmetz denied that any damage had occurred within Glacier Park as a result of fluoride emissions from the AAC plant. Most reports on damage to vegetation in the Park by fluoride emissions had been “expressed as predictions” not as fact, he said. A few trees near West Glacier showed unusual signs on their needles that Steinmetz believed resulted from extreme weather, and in any event the trees were not within the Park boundary. Finally, Steinmetz described the complexity of the industrial activity inside the AAC plant. The 10 potrooms covered the equivalent of 20 football fields. The air flow necessary to cool the rooms in summer time amounted to 25 million cubic feet per minute. The plant’s wet scrubbers dealt with pot gas collected from the reduction pots, he explained, but the immense quantity of air flowing through the pot rooms passed through the clamshells along the ridge of the roofs without treatment.<sup>58</sup>

On Dec. 12, 1969, Jack Holterman wrote to the Hungry Horse News to criticize the “faulty argumentation” used by Steinmetz in defense of the plant’s air pollution control efforts. Holterman accused Steinmetz of presenting “the inevitable statistics, which of course portray Anaconda, not as evil oppressor, but rather as Great White Father.” He also accused Steinmetz of using evidence from company experts to refute claims of damage to vegetation and animals in the area and even denying “so blatantly the evidence of Teakettle Mountain, daily before our eyes!”<sup>59</sup> On Dec. 26, the Hungry Horse News reminded readers of the unemployment and bleak economic conditions in 1949 before completion of the Hungry Horse Dam and the AAC plant. “There wasn’t much evidence of fluoride damage to vegetation until the fourth and fifth potlines went into operation,” the editorial pointed out. “The 1970s will not tolerate pollution experienced in the 1960s. At the same time there are not many of the 35,000 residents of Flathead County who would want this valley to return to economic conditions of 20 years ago. The Flathead has the industrial jobs producing development that Montana seeks to maintain its cities, schools and keep its young people. Demand for clean air and water is not a major urge in the Flathead at this time. It will be. There’s much here to save.”<sup>60</sup>

Warren Hook, the aluminum plant’s environmental control manager, addressed air pollution issues with an historical perspective in a January 1970 interview by Sam Reynolds of the Missoulian. Hook noted that in the early 1950s, when the Anaconda Company was considering building an aluminum plant near the Hungry Horse Dam, conventional wisdom among aluminum companies was to build smelters far from neighbors who might suffer impacts from air pollution. The Anaconda Company based their decisions about building their plant on two main criteria –what type of smelting process produced the purest aluminum at the least cost, and which system lent itself best to pollution control. There were three choices for smelting processes – the prebake pot, the horizontal-stud Soderberg pot and the vertical-stud Soderberg pot. In the early

1950s, the prebake pot system had the most problems with air pollution, Hook said, and the company chose the vertical-stud Soderberg pot system. By 1970, technology had advanced to the point where the prebake pot system emitted the least air pollution.<sup>61</sup>

In 1968, when AAC considered building two more potlines, Hook told the *Missoulian*, the decision was made to stick with the existing vertical-stud Soderberg pot system to avoid the costs of operating a plant with two kinds of processing systems. By 1970, the AAC plant's pot gas scrubber system removed 92% of the fluoride in collected pot gases, Hook said, but air flowing upwards from the basement over the reduction pots carried fluoride through the clamshell vents running along the ridgelines of the 10 potrooms. He noted that rooftop scrubber systems had a tough time dealing with fluoride and hydrocarbon emissions simultaneously. And closing off the roof vents with a bag system would create a dangerous health hazard for workers in the plant and might not work anyway, he said.<sup>62</sup> In February 1970, William H. Benton, executive vice president of AAC, and Donald W. Everett, vice president of operations for AAC, traveled to Columbia Falls from AAC's headquarters in Louisville, Ky., to look over the situation. "It was heartening to hear Benton and Everett declare without hedging that air pollution from the AAC plant in the Flathead must be reduced," the *Hungry Horse News* reported.<sup>63</sup>

While the Anaconda Company denied reports of damages by its fluoride emissions and reminded the public of the economic benefits its plants provided, government investigations continued. In January 1970, Gordon sent a 20-page report to Wake on the impacts of AAC's fluoride emissions. Gordon reported: 1) that damage found in conifers located near the smelter plant was a consequence of fluoride concentrations present in the needles, and that these effects were also occurring in Glacier Park, although the damage was not yet evident; 2) lettuce grown within the fluoride emissions area contained fluoride in excess of the 7 ppm, the maximum acceptable limit set by the U.S. Food and Drug Administration for consumption; and 3) concentrations of fluoride found in grasses growing near the smelter sometimes exceeded the state's maximum limit of 35 ppm for forage. Studies of small mammals found within the fluoride emissions areas had not yet been conducted as funding was unavailable. AAC took the position that trees in Glacier Park had not suffered visible damage, Gordon reported, but Park Superintendent William Briggie had called for ambient air monitoring and was prepared to take action to eliminate threats to the Park.<sup>64</sup>

Gordon said he gathered samples from conifers, rodents, grasses and lettuce from people's garden during the summer of 1969. He said the project was in its early stages and was looking at causal damage, the geographical extent of the emissions and possible impacts to human health. Samples had been gathered from 21 sites around the aluminum plant, including lettuce from 10 gardens near the smelter. Eight femurs were

tested from the 150 animals that had been trapped. Four rabbits were fed lettuce from area gardens and then killed and sampled. While the early study involved testing new equipment and familiarizing himself with the area, Gordon concluded that fluoride was harming conifers in the area.<sup>65</sup>

## **The science of rhetoric**

Gordon also kept up his public speaking – and his harsh criticism of the Anaconda Company. On Jan. 20, 1970, during a slide show and lecture for about 250 people at the Columbia Falls High School, he said that “the only way to get a big company such as Anaconda Aluminum to tell you what it is doing is to go to court.” Gordon said tests on deer and rodents collected from Teakettle Mountain showed fluoride levels from 28 ppm to 49 ppm, and that lettuce collected from a garden in Kalispell, 12 miles away from the plant, contained fluoride levels of 110 ppm. Ponderosa pines readily showed evidence of fluoride damage while grasses did not. He estimated that ponderosas in people’s yards that received regular watering would live another couple years, while those in the forests would die within a year. Gordon was particularly worried about the effects of the two new potlines built and put in operation at the AAC plant in the late 1960s. A member of the Environmental Defense Fund and a GASP supporter, Gordon sharply criticized the Anaconda Company’s operations across Montana. “The Anaconda Company has a fantastic way of solving its pollution problems,” he said. “They simply buy the valleys, and the persons living there live in slavery.” He concluded by stating that if the cost of controlling air pollution made the plant unprofitable and it had to shut down, that was “better than running the plant at the expense of our health and environment.”<sup>66</sup> Gordon encouraged listeners to take action. “It’s your state,” he said. “Are you going to make it beautiful or let it die? It will die if you don’t stand up and fight for it.” Gordon accused the Anaconda Company of treating “this rich state as a colony.”<sup>67</sup>

Gordon presented slides of trees damaged by fluoride emissions from the aluminum plant and argued that the only way to save Glacier Park was to shut down two potlines at the smelter. Urging the listeners to sue the plant, he added, “They shouldn’t run that plant at the expense of my health... All the money goes out of the state anyway... Clean that plant up or move.” Gordon pointed out that Anaconda’s solution to pollution problems in the past had been to purchase land damaged by their plants’ fumes. He cited the company’s recent purchase of the Christmas tree farm south of the Montana Veterans Home in 1969. Gordon also criticized the Forest Service for allowing 3,000 acres of timberland on Teakettle Mountain to be destroyed by fluoride emissions and for trading lands that were damaged by air pollution. He noted his study of flora and fauna included 150 rodents found near the plant with fluoride levels as high as 4,900

ppm and rodents in Glacier Park with fluoride levels as high as 400 ppm. He also showed a slide of a deer found on Teakettle Mountain with damage to its teeth caused by fluoride. Gordon pointed out that he had not studied the effects of fluoride on local surface waters or locally grown fruit, or the direct effects of fluoride on human health.<sup>68</sup>

The Hungry Horse News commented on Gordon's talk in a Jan. 23 editorial. "Dr. Gordon is a self-considered David in his battle against the Anaconda Goliath," it said. "He hasn't any kind words for them, nor is he concerned with what the local economy was like prior to 1952." The editorial warned that the battle for air pollution control in Montana was "just getting started, and is the type of conflict that can be bitter with layoffs, economic reprisals and lost friendships. That will happen if 100 or 200 men lose jobs. However, environmental awareness is becoming a way of life, and in the end must triumph."<sup>69</sup>

Gordon's Jan. 20, 1970, talk led to more letters sent to his office at the University of Montana. Columbia Falls area resident Joe Cada said he and other people who heard Gordon were impressed and interested and had respect for him. "For my part, I want to thank you for the man you are, for having the guts to stand up to our industrial elephants," Cada said. These large companies were poisoning people, destroying the environment, stealing natural resources, robbing electric power, and stealing state and federal taxes, he said.<sup>70</sup> On Jan. 28, Columbia Falls area resident Frank Evans congratulated Gordon on his recent lecture "I greatly enjoyed your talk and I didn't think that you were the least bit emotional," he said. "I thought you were personable and folksy while still being respected as an authority."<sup>71</sup>

On Feb. 4, Martin City resident Barbara Madden wrote to Gordon seeking some more facts before she attended the Jaycees' talk on Feb. 9 led by AAC officials. "The only way to fight them is with some real facts, which I'm sure you have or can get your hands on," she said.<sup>72</sup> On Feb. 10, Columbia Falls High School student Bradford Bucher wrote to Gordon seeking more information on air pollution for a school program. Gordon responded right away.<sup>73</sup> On May 13, Columbia Falls area resident Bob Muth wrote to Gordon about comments AAC General Manager Charles Taylor had made in public and in the newspaper. Muth said AAC managers had told plant workers the smelter would shut down if the state's new standards for fluoride emissions were put in place. He said some residents were advising, "We need Anaconda, don't bug them." Muth said he would join Columbia Falls dentist and conservationist Loren Kreck and three women from GASP at an upcoming AAC meeting about air pollution. "I fear the psychological value of the Chamber of Commerce," he said. Muth suggested that Taylor controlled Columbia Falls Mayor Roger Elliot, and that the Daily Inter Lake edited out any mention of human health in letters to the editor.<sup>74</sup>



The AAC perspective was presented during an air pollution talk sponsored by the Columbia Falls Jaycees on Feb. 9, 1970. About the same number of people showed up at the Columbia Falls High School as had showed up for Gordon's talk, and reporters from Western Montana were in attendance. "Two months ago there was a much more dismal picture than we have today," Taylor said. "Now we have a law that sets standards which apply to everyone and us at the plant. If you are a good citizen of the community you obey that law. It's not for you or us at Anaconda to decide... We fully understand it. We have no intention of evading it. We are going to solve it. We have made our first step." Taylor acknowledged that the plant had emitted about 7,500 pounds of fluoride per day that might have impacted vegetation in the surrounding area. "Apparently we have a slight problem," he said. "We have certainly killed some trees, especially in a gully up Teakettle Mountain."<sup>75</sup>

Taylor also provided some history of Teakettle Mountain. "If it weren't for the aluminum plant, Teakettle Mountain would be like Columbia Mountain. That isn't true," he said. Taylor pointed out that the 1929 Half Moon Fire had burned over Teakettle Mountain, and that the rocky terrain was not conducive to tree growth. He described studies of trees on the mountain conducted by H.M. Benedict of the Stanford Research Institute and A.W. Hook, the plant's environmental control officer. Benedict believed that many of the trees would recover.<sup>76</sup> The Stanford Research Institute had conducted air pollution studies for Kaiser's Mead smelter in Spokane in 1950.<sup>77</sup> The institute also had offered to investigate potential pollution problems for the Harvey Aluminum Co. before Harvey built its smelter at The Dalles, Ore.<sup>78</sup>

Taylor told the audience about an investigation of 200 head of cattle living in the north Flathead conducted by John Suttie at the University of Wisconsin and F.A. Young, a Whitefish veterinarian. "They found no effects that would result in economic loss to the owners," Taylor said. A 12-year old dairy cow owned by Cliff Sedivy, a rancher who lived just north of the plant, was purchased by AAC and butchered. Young had inspected the tissue and "all appeared normal," Taylor said. "If any of you have cattle and worry about them, please contact Dr. Young. He'll give you his opinion and advise us."<sup>79</sup> Suttie was not new to the aluminum industry and fluoride emissions – he had written a brochure about air pollution for the Aluminum Association and helped the Washington and Oregon state air quality bureaus draft air quality standards for fluoride emissions.<sup>80</sup> Taylor also discussed big game animals living on Teakettle Mountain. No negative reports had been heard about the mountain sheep living on the mountain, he said. Four mule deer that had been shot by Montana Fish and Game officials on Jan. 31 were being investigated, and so far their physical condition seemed good, he said. Taylor also said that company investigations of Glacier Park did not come up with the same results as reported by Gordon.<sup>81</sup>

Taylor also told the audience about AAC's attempts to improve pollution control, including talks with other aluminum producing companies. "There were many discouragements," he concluded. During the question and answer period, Taylor was asked about fluoride emissions, state standards, fluoride tolerance of forage eaten by beef cattle, local weather conditions affecting the location of air monitoring stations, water pollution from the plant, comparisons made in the media between the AAC plant in Columbia Falls and the phosphate plant in Garrison, budgeting for pollution control, comparisons between Gordon's studies and those done by AAC, and target dates for compliance with new state standards. Loren Kreck asked why the plant added two more potlines in 1967 to 1968 when the company lacked the technical expertise to control fluoride emissions. Taylor replied that aluminum smelters emit some fluorine and the company was trying to meet state standards for emissions. Jim Samuelson asked about news stories that Alcoa had developed a process for control of fluoride emissions. Hook replied that Alcoa used a different smelting process and that the Alcoa pollution control system had limitations. Finally a woman in the crowd asked what the company would do when the deadline came and no new technology existed to solve the fluoride emission problems. "We don't know," Taylor replied.<sup>82</sup>

On Jan. 25, 1970, the Missoulian ran a story by Sam Reynolds about air pollution problems at the AAC plant in Columbia Falls. "The fact that damage to pines is occurring is no longer debated," Reynolds reported. "Debate centers on the extent of the damage." During a trip to Columbia Falls to see the damages, Glacier View District Ranger Henry E. Hays told Reynolds that damaged timber on the west side of Teakettle Mountain was not commercially merchantable, but damaged timber on the east side would be merchantable once it matured for harvest. "Hays said that the Forest Service has not faced a timber loss quite like this one in the past and may decide to write off the loss, much as it writes off losses to fire, insects, winter kill or disease," Reynolds reported. "Earlier that day, Clancy Gordon, looking up at the poisoned stumps of Forest Service trees on Teakettle Mountain, remarked that, 'If an insect did that to Forest Service land, they'd spray it tomorrow.'" Gordon's recommendation was to shut down half the potlines to the level before the expansion during the 1960s, or "bag the roof vents." AAC environmental manager Warren Hook said the buildings were not designed to support the weight of rooftop scrubbers. Hook also said he doubted rooftop scrubbers would work.<sup>83</sup>

Benjamin Wake, as director of air pollution control for the Montana Board of Health, also continued his public speaking. On Jan. 28, 1970, Wake met with the media at the Flathead County Courthouse in Kalispell to announce the implementation of new air pollution regulations and enforcement in Flathead County. "Air quality is not acceptable in the Flathead Valley," he said, adding that if progress was not made in a year's time

“something is drastically wrong.” While most of his presentation dealt with the timber industry and burning by residents, Wake also referred to the aluminum smelter in Columbia Falls. The AAC plant “has a tremendous problem with staggering technical difficulties,” he said. “Control must come about. It will come about.” He added that beginning June 30, new regulations would make dust emissions by the carbon paste plant a violation. During the press conference, it was announced that Jack Dodd, a former Glacier Park assistant superintendent, had been named senior observer for air pollution control in Flathead County effective Feb. 1.<sup>84</sup>

In May, Wake spoke at a meeting of the Flathead County Chapter of Gals Against Smog and Pollution. Wake called Columbia Falls “probably one of the dirtiest towns in the Pacific Northwest” and said it had “the dirtiest air in Montana.” He called on residents to use dust suppression measures to eliminate the prime problem facing the town – dust from streets. Regarding the AAC plant, Wake said that technology existed to clean up fluoride emissions but it was expensive. New pollution control systems developed by Alcoa could be adapted for use at the AAC plant, he noted. As for the health of trees in the area, Wake said, “It may be too late for trees now, and if it’s a dry year with a lot of insects, a lot of trees won’t make it.” Wake asked residents to support the new fluoride standards proposed by the state, which he did not consider excessive, and he urged residents to write to the Montana Board of Health before it met on May 21 to decide on the standards.<sup>85</sup>

Sen. Mike Mansfield commented on the growing awareness of air pollution problems in the country during a trip to Columbia Falls in January 1970. The number one domestic problem in the nation for the administration and Congress was pollution, he said. He noted that the Senate had increased President Nixon’s request for \$200 million to fight pollution to \$1 billion, a figure that was later cut to \$800 million in conference with the House. Nixon had emphasized the need for water and air pollution control in his State of the Union address, calling for spending \$10 billion to clean up the nation’s waters. Sen. Lee Metcalf also spoke about the need to address pollution problems.<sup>86</sup> The Hungry Horse News commented on the growing awareness of pollution problems nationwide in a Jan. 30 editorial. According to Mansfield, the federal government had budgeted \$400 per American for defense but only \$13 per American for health programs. Interior Secretary Walter J. Hickel had predicted that pollution control programs would eventually become part of the cost of doing business, meaning all consumer products would cost more. “It will amount to part of every man’s profits and wages to keep the world from becoming dirtier,” the newspaper said.<sup>87</sup>

The Anaconda Aluminum Co. was not alone in opposing new state fluoride regulations and in criticizing state and federal investigations – the smelter’s union leaders had their

own opinions on the matter. The February 1970 issue of "The Aluminum Shaft," a newsletter put out by the Aluminum Workers Trades Council, honed in on Gordon and others. "Air pollution is all the big news around the plant, Flathead Valley, the state and in Missoula," the newsletter stated. "If we worried half as much about Missoula as 'Clanky Garter' worries about us, we would all be grey-headed in short order." The anonymous writer suggested that AAC should have clear-cut Teakettle Mountain long ago to solve the problem of dead or dying trees. The writer also compared the death of trees by fluoride emitted from the smelter to clear-cuts on National Forest lands for lumber. In general, the writer didn't like people from Missoula coming north to stir up trouble in the Flathead.<sup>88</sup>

In the May 1970 issue of "The Aluminum Shaft," an anonymous writer noted that "Clankity Garter" claimed he had \$75,000 in government grant money to study fluoride pollution. The writer said it was impossible for AAC to meet the state's proposed fluoride emissions standard, and noted that the standard had not been set by elected legislators. The writer said no other state had an emission standard based on pounds of fluoride per pot per day.<sup>89</sup> In the September 1970 issue, an anonymous writer said workers at the AAC plant were doing all they could to control air pollution, but AAC management was running high amperage through the reduction pots, which caused emission problems. "Management is entitled to the union's support in the pollution battle only as long as they do their part in effecting controls, and at present, their attitude seems to be 'pollution control be damned,' put it out the roof," the writer said.<sup>90</sup>

## **Field testing and reports**

By 1970, after more than a year of fluoride emissions from five potlines and 600 reduction pots at the AAC smelter, investigations at Glacier Park, about six air miles east of the smelter, came up with varying results depending on who paid for the studies. On Jan. 2, 1970, an AAC spokesman told the Hungry Horse News that company surveys had found "no visible effects from fluoride in Glacier National Park." The spokesman added that the company was studying ways to reduce fluoride emissions to prevent future damage in the Park, and that recent modifications in operating practices had reduced emissions.<sup>91</sup> But Park managers were intent on finding out for themselves. In January 1970, the National Park Service's Midwest Regional Director asked the National Air Pollution Control Administration to conduct a professional study on fluorides. In February, the Forest Service submitted a report on their fluoride studies in Glacier Park. In April, the Forest Service and the National Park Service agreed to coordinate efforts to study fluoride and have NAPCA involved.<sup>92</sup>

In May, NAPCA representatives met with Glacier Park and Forest Service officials to discuss setting up a fluoride study. Park Superintendent William Briggie had requested the study and was helped by Sens. Mansfield and Metcalf.<sup>93</sup> Present at a May 7 meeting in West Glacier to discuss the study were Briggie, Wake, four NAPCA representatives and Flathead Forest Supervisor J.M. Pomajevich.<sup>94</sup> NAPCA began setting up equipment and sampling stations in Glacier Park by June. Gordon was a member of the NAPCA staff. In addition to sampling stations inside the Park, three stations were set up to study impacts in the Flathead Forest near the Park.<sup>95</sup> In August, NAPCA issued a report by O. Clifton Taylor on fluoride damage in Glacier Park. In September, AAC submitted their own report on fluoride samples collected in Glacier Park.<sup>96</sup> In October, Briggie announced that the study of fluoride impacts on flora and fauna in the Park would continue to the end of the year.<sup>97</sup>

In June and July 1970, Gordon collected samples in the affected area. Test results from the samples were included in his 145-page draft report on "Fluorides and their effects on vegetation and wildlife in the Columbia Falls, Montana area," which was issued in January 1972. Gordon divided the 410-square-mile area into 19 zones, including nine in Glacier Park. The 10 zones outside the Park included 12,670 acres on the west face of Teakettle Mountain, 36,860 acres around Columbia Falls, 11,520 acres around Coram, 9,220 acres around Lake Five, 5,890 acres around Columbia Mountain, 7,680 acres around Desert Mountain, 18,180 acres in the South Fork of the Flathead River area, 26,880 acres in the Middle Fork area, 17,410 acres in the North Fork area, and 4,100 acres around Doris Mountain on the Swan Range. The nine zones inside Glacier Park included 2,880 acres in the Headquarters Hills area, 9,360 acres in the Belton Hills, 12,800 acres around Apgar Ridge and the Middle Fork Ranger Station, 3,300 acres around Apgar Lookout, 2,880 acres around Boehm's Bear Den between Camas Creek and Huckleberry Mountain, 57,860 acres around Lake McDonald, 8,960 acres in the Camas Creek area, 6,400 acres around Huckleberry Mountain, and 7,680 acres around Loneman Mountain. Gordon reported that while the zones varied in size, the concentrations of fluoride found in samples from each area were similar. Samples were also taken from "control" areas in Glacier Park, including the Many Glacier, Swiftcurrent and upper St. Mary Lake areas east of the Continental Divide, and in areas outside the Park across Western Montana.<sup>98</sup>

Gordon reported that needles on conifers typically had three years of growth, so he was able to sample for the years 1968 through 1970 using needles collected in 1970. All told, Gordon reported conducting 1,600 fluoride analyses. In 11 of the 19 zones, fluoride concentrations exceeded the state standard of 35 ppm for forage, including Teakettle, Columbia Falls, Coram, Lake Five, Columbia Mountain, Doris Mountain, Headquarters Hills, Belton Hills, Apgar Ridge and Boehm's Bear Den. Five of those zones were inside

Glacier Park. The same approach applied to sampling of animals. More than 300 animals were collected in the sample areas, mostly herbivores that fed on vegetation. Animals that were sampled included Columbian ground squirrels, deer, deer mice, grouse, flying squirrels, hairy woodpeckers, house cats, house mice, meadow voles, shorttail weasels, sparrows, chipmunks, martins, snowshoe hares, bushytail wood rats, red squirrels, golden-mantled ground squirrels and coyotes. The highest concentrations in animals were found in the zones closest to the AAC smelter, paralleling the findings for vegetation. The highest concentrations found in animals from Glacier Park were 7 to 30 times greater than in animals from “control” areas.<sup>99</sup>

Gordon concluded that fluoride emissions from the AAC plant entered Glacier Park and even landed 28 miles away at Logan Pass in the center of the Park. Gordon noted that according to NAPCA, the prevailing winds around the AAC smelter were northeasterly in daytime and southwesterly at night. Gordon reported that the highest fluoride concentrations in some zones were found not on valley floors but on hillsides at 3,800 to 4,400 feet above sea level, with the exception of the Middle Fork or Columbia Falls zones. He surmised that winds pushed fluoride emissions around Apgar Mountain and past the Belton Hills into the Lake McDonald valley inside Glacier Park. He also reported that the highest fluoride concentrations were found in needle growth from 1968. He reported finding about half as much in 1969 growth, and about half as much again in 1970 growth. Gordon surmised that excessive concentrations of fluoride found in vegetation came from gaseous hydrogen fluoride, not from fluoride particulates. He also noted that NAPCA measurements of ambient air in 1970 showed fluoride levels at less than the state standard of 1 ppb. This point was important because AAC had announced plans to install more air pollution control equipment at the smelter that would reduce particulate emissions but not gaseous fluoride emissions. Gordon noted that the state ambient air standard of 1 ppb did not take into account long-term accumulation of fluoride in plants. In conclusion, Gordon said his sampling provided evidence that fluoride concentrations were increasing by several orders of magnitude in the food chain, which would eventually impact carnivores further up the food chain.<sup>100</sup>

While the federal government organized fluoride-impact studies for Glacier Park and the Flathead Forest, the state continued its work in developing air quality standards for fluoride emissions. On Feb. 20, 1970, the Montana Air Pollution Control Advisory Council met in Helena and voted to adopt Regulation 90-017, a proposed regulation for fluoride emissions that was scheduled for a public hearing before the Montana Board of Health in May. The regulation dealt only with fluoride emissions from phosphate plants such as the one in Garrison but not for aluminum plants. Fluoride emission standards for aluminum plants were still pending. Present at the meeting was Frank J. Laird, a Council member and head of the Anaconda Company’s environmental control division. His

company staff numbered 13 while the total state staff numbered 14. Also present were five women from the Missoula Chapter of Gals Against Smog and Pollution, including their president Nancy Fritz. Most of the hearing focused on the timber industry and wood burning.<sup>101</sup>

Members of the Montana Air Pollution Control Advisory Council were appointed by the governor and confirmed by the Montana Senate, the same way members of the Board of Health were appointed. Mel Ruder, publisher of the Hungry Horse News, was a member of the Council.<sup>102</sup> On Feb. 27, the Hungry Horse News called for public cooperation in order to make the Montana Clean Air Act work. The editorial compared air pollution regulations to dog leash laws. "It will be unfortunate for air pollution control if enforcement encounters the same apathy as do dog leash laws," the editorial said. "There is responsibility for boards that adopt regulations to keep in mind what is reasonably enforceable. Obviously air pollution control is going to result in curbing individual practices as well as major investment by industry."<sup>103</sup>

### **Aluminum plant regulations**

The lack of regulations while investigations continued in Glacier Park struck a dissonant chord. In March 1970, Montana Attorney General Robert Woodahl said he had talked twice with AAC officials about fluoride pollution in the Columbia Falls area, but "nothing concrete" had resulted. It was common for industrial plants to be given a year or so to comply with new regulations, but Montana still did not have standards restricting fluoride emissions. Woodahl was aware of the need for action if trees in Glacier Park were being impacted. "I don't intend to wait until the last moment for them to make a decision on what they will do," he said. "I can't take any legal action now, but I intend to communicate with them."<sup>104</sup>

On March 6, 1970, the Hungry Horse News published a prescient editorial on the future of the Anaconda Company, suggesting that the company's future rested on how well it handled its fluoride emissions problem. The state of Montana was adopting more air pollution control regulations than most states, and the Board of Health was "at present in a head-on collision" with the state's big industry, including Anaconda. It appeared that the AAC plant had not been able to find a solution to its fluoride emission problem and "the company appears correct in assuming that the Flathead is more interested in payrolls than in survival of trees in and near Columbia Falls." On the other hand, damage to vegetation in Glacier Park had the potential to become a national issue and could draw the attention of such organizations as the Sierra Club, the editorial stated. The effect of environmental groups on the Anaconda Company's business became evident on March 2, 1970, when conservationists blocked the company's attempt to obtain easements on state school lands near Lincoln. Anaconda had plans to develop an open-

pit copper-molybdenum mine in the Heddleston District in the Blackfoot River drainage between Great Falls and Missoula that would have employed 500 workers.<sup>105</sup>

A group of high-ranking visitors toured the AAC plant on April 14, 1970. Leading the group were A.W. Hook, Charles Taylor, Frank Laird and Bernard Kostelnik. Visitors included Ben Wake, two representatives from NAPCA, two representatives from the U.S. Department of Health, Education and Welfare office in Salt Lake City, and Jack Dodd, the state's resident air pollution observer for Flathead County. Information gained from the tour was expected to be presented at a Montana Board of Health hearing on May 21.<sup>106</sup> In late April, Wake released to the public the text of proposed fluoride emission standards for existing aluminum smelting plants, of which there was only one in Montana. The proposed standards would be discussed at the May 21 health board hearing and go into effect on June 30. The Montana Air Pollution Control Advisory Council had decided on Feb. 20 to exclude aluminum smelters from proposed regulations for fluoride emissions due to technical difficulties, but by early April, the Board of Health had decided to go ahead and set standards for fluoride emissions at aluminum smelters.<sup>107</sup>

According to Regulation 90-019, aluminum smelters would be limited to emissions of fluorides in gaseous or particulate forms to no more than 0.060 pounds per hour per reduction cell. For the smelter in Columbia Falls, that came to 864 pounds per day for the entire plant with 600 pots operating. Regulation 90-019 also included rules for monitoring and reporting by the plant. Fluoride emissions were to be monitored at the exhaust stack of any fluoride pollution control device and at the emission points for each pot room – the clamshell vents on the roofs of each pot room. Monitoring results were to be reported to the government agency each calendar month. The reported data was to include average daily emissions and other data as required by the state's air pollution control director.<sup>108</sup>

On May 12, 1970, the Columbia Falls Chamber of Commerce agreed to send a delegation to the May 21 health board hearing. Charles Taylor told the Chamber that no aluminum smelting plant in the nation or the world could meet the proposed standards. With five potlines running, Taylor said, the plant emitted about 7,500 pounds of fluoride per day. The new standards would limit the plant to only 864 pounds per day. Taylor noted that Washington State's ambient air standards for aluminum smelters were three times more lenient than those proposed for Montana. He added that no health hazards were posed by emitting 7,500 pounds of fluoride per day.<sup>109</sup> The Chamber delegation announced its support of AAC's position and presented a prepared statement. "The Anaconda fluoride problem affects not only the thousand employees but also several thousand of supporting businesses and millions of dollars of property values," the



statement said. The Chamber urged the Montana Health Board to consider both sides and to “protect both our environment and the economy of our area.” Also in attendance were members of the Flathead County Chapter of Gals Against Smog and Pollution, which helped gather 300 cards and letters in support of the proposed fluoride emission standards and presented them to the board.<sup>110</sup> Curtis O. Peterson, president of the Aluminum Workers International AFL-CIO, representing 560 of the hourly workers at the AAC plant, argued against the proposed standards, calling them “arbitrary and unreasonable.” Speaking on behalf of the hourly production workers, Peterson said, “The matter needs research and study by unbiased people in order to arrive at reasonable standards, on a total plant emission basis, that would protect the interest of environmental groups, workers and industry.”<sup>111</sup>

The Hungry Horse commented on the May 21 health board hearing the next day. “From the Flathead standpoint, there isn’t a single labor union, chamber of commerce or service club that has taken a stand that could be construed as support of the proposed fluoride emission standard being asked in Helena Thursday,” the newspaper said. The editorial reminded readers that damage to vegetation in Glacier Park was a national issue with bigger implications.<sup>112</sup> On June 30, Wake told the Montana Air Pollution Advisory Council that he supported the 864 pound-per-day fluoride emission standards for the AAC plant. The only change in the proposal that he felt was acceptable was to move the compliance date from June 30, 1972 to June 30, 1973. AAC had said it was in the process of reducing fluoride emissions, but the best it could hope to accomplish was 2,500 pounds per day, Wake explained. That amount would compare favorably with the 3,800 pounds per day the plant emitted when it had three potlines instead of five, Wake noted.<sup>113</sup>

Wake continued to support the new fluoride standards at a July 3, 1970, advisory council meeting. By July 1970, with new pollution control equipment in place, the smelter was emitting an estimated 4,500 to 5,000 pounds per day, down from 7,500 pounds. AAC had proposed reducing emissions to 3,500 pounds by 1971 and then to 2,500 pounds by 1972 when the new emission standards went into effect. Wake, however, told the Hungry Horse News that he believed technology existed to reduce the plant’s fluoride emissions to 864 pounds per day. Referring to the health board’s May 21 hearing, Wake said “nothing productive whatsoever was presented by the aluminum people.” Wake expressed his distrust for the company’s position. “Everybody says their operation is marginal,” he said. “I’ve heard this for 20 years, ever since I’ve been in this work.” Wake also noted NAPCA’s ongoing study of fluoride damage in Glacier Park. “No doubt damage will be found in Glacier National Park, if fluoride levels are at 1969 levels,” he said. Frank Laird disagreed. “No aluminum plant in the United States as far as I know can comply with the proposed Montana standard,” he told the newspaper.

When Wake called Columbia Falls “a captive community,” Mel Ruder objected. The Anaconda Company did not wave a “big stick” in Columbia Falls, he said, and the town was not a one-industry town – it had four lumber mills employing 600 people. Ruder said he favored regulations for fluoride emissions and told of damage to his own trees. If the Columbia Falls area didn’t have trees, he wouldn’t live there, he said. The local chambers of commerce, labor unions and residents of Flathead Valley in general felt the proposed standards were unfair, Ruder said, and the public reaction was completely different than in the Missoula Valley, where residents turned against the Hoerner-Waldorf pulp mill. John Anderson, executive officer for the Montana Department of Health, remarked that Montana was in the forefront of fluoride emission control efforts nationwide. Wake later remarked that regulations for fluoride emissions in Washington State and Oregon didn’t amount to much.<sup>114</sup>

News about the new fluoride standards spurred a new round of letters to the Hungry Horse News. On May 15, 1970, Marle Brown argued that AAC should spend the money needed to reduce fluoride emissions to 864 pounds per day as proposed by the state. “The proposed emission standards are neither excessive nor unrealistic,” she said. “Technology is available to limit fluoride emission to 864 pounds per day, still enough to damage foliage within three miles of the plant. Does AAC expect us to believe they would spend the millions involved in closing the local plant and relocating elsewhere when for a mere fraction of that cost they can put in proper equipment? I don’t believe it! Let’s support our State Board of Health and keep our beautiful valley alive for the future.”<sup>115</sup> On June 5, Edwin G. Conrad expressed concern about apathy in the area over impacts from air pollution. Conrad worried that national conservation groups might step in and solve the problem to the detriment of the local economy. He recalled a newscast reporting that AAC made \$25 million in the previous fiscal quarter. “They have no right or duty to continue unsafe fluoride emissions even if meeting such a standard is expensive,” he said.<sup>116</sup>

In a June 26 letter to the Hungry Horse News, Charles K. Green wrote that he drove all around the west side of Teakettle Mountain and in the valley between Hungry Horse and West Glacier looking for damage to trees caused by fluoride “and found none whatever.” Green acknowledged that trees on Teakettle Mountain near the plant were damaged by fluoride, but “their value other than for scenery was nil.”<sup>117</sup> Bob Muth responded to Green’s letter on July 3. Muth questioned Green’s education and training or his ability to make such a determination and suggested that Green’s real estate holdings in the area biased his opinion on the subject. Muth pointed out that numerous professionals, including University of Montana scientists, National Park Service personnel and Forest Service officials, had all gone on record stating that damage to

vegetation by fluoride emissions existed. “Brown and dying conifer needles have the remarkable ability of assuming a healthy green when money is involved,” he said. <sup>118</sup>

On July 10, Jack Holterman congratulated Benjamin Wake for standing up to the Anaconda Company and his portrayal of Columbia Falls as “a captive town.” Holterman explained how that situation could come about. “One technique is to confuse the public with phoney logic and sloppy language,” he said. “And you can’t really blame the public for being confused around AAC.” He referred to recent reports from AAC-sponsored scientists stating that no fluoride damage could be found in Glacier Park. “If Mr. Wake sticks to his guns, we may escape captivity after all,” he said. <sup>119</sup> On July 10, Bob Friedman criticized a recent study by AAC-sponsored scientists. “Isn’t it curious that it took only a few days for a group of consultants ‘at the request of AAC’ to arrive at the ‘unanimous conclusion’ that there is no evidence of fluoride damage in the area they surveyed inside of Glacier National Park?” he asked. Friedman noted that similar studies, conducted by NAPCA at the request of the National Park Service, would take all summer. Friedman also noted that according to an AP story, Donald W. Everett, AAC’s vice president for operations, had admitted during a health board meeting the possibility of fluoride emissions from the AAC plant causing continuing damage in Glacier Park. <sup>120</sup>

The condition of trees in Columbia Falls attracted AAC’s attention through 1970. During the summer, Mike Britton, a biology teacher at Flathead Valley Community College who worked as a consultant for AAC, collected samples from ponderosa pine trees on the Hungry Horse News property and sent them to the Forest Service’s Region 1 office in Missoula for analysis. The results showed feeding by two possible types of bark beetles, *Pityophthorus* sp. or *Pityogenes* sp. The 1968 and 1969 needles on the tree also showed signs of fluorine injury. According to Frederick W. Honing, chief of the Insect and Disease Branch at the Region 1 office, “Although difficult to prove, the tree may have been predisposed to insect attack by primary fluorine injury.” <sup>121</sup>

In June, Burlington Northern Railway contributed \$580 toward the purchase of 65 Scotch pine trees to be planted at Depot Park in Columbia Falls. Scotch pines were considered more sensitive to fluoride damage than ponderosa pines, and the Columbia Falls Chamber of Commerce, which established the project, considered the trees to be a kind of fluoride test plot. If the trees were damaged by fluoride emitted by the nearby AAC plant, the Chamber would be “embarrassed,” the Hungry Horse News reported. <sup>122</sup> On July 10, the Hungry Horse News expressed optimism about the city’s trees. “Of much interest in Columbia Falls this summer is vitality and appearance of ponderosa pines,” the editorial said. “Some trees look better, and it’s indicator that Anaconda Aluminum Co. has reduced fluoride emissions.” Noting that AAC had reduced emissions from 7,500

pounds per day to 4,500, and referring to the \$8.5 million plant payroll, the editorial concluded that “AAC men are good neighbors” and asked for reasonableness at the Montana Board of Health’s hearing on fluoride emissions.<sup>123</sup>

To muddy the air even further at a time when debate over fluoride emissions was already heated, the Anaconda Wire and Cable Co. requested the first of several air pollution variances for its new rod mill at the AAC plant in May 1970. According to Wake, the variance covered “dense plumes of white smoke from stacks in its rod mill furnace at Columbia Falls.” The smoke was said to reduce visibility in the surrounding area and contained aluminum chloride, hydrochloric acid mist and probably some free chlorine, Wake explained. AAC said it needed two years to complete engineering studies to develop pollution control equipment for the rod mill.<sup>124</sup> The Montana Board of Health reviewed the variance request on July 10. Frank Laird told the board that pollution control equipment had been delayed in shipment. After the equipment was installed and tested, the pollution problem would end, he said.<sup>125</sup> The company was back with another variance request for the rod mill on May 7, 1971. The Anaconda Wire and Cable Co. had installed a foreign-designed degassing process on one of its three continuous-casting lines at the rod mill to control aluminum chloride emissions. According to a plant spokesman, the new process would reduce emissions to less than that stipulated by the state, but the company needed time to check out the effect of the system, the first of its kind in the world.<sup>126</sup>

The Montana Board of Health granted another air pollution variance for visible emissions at the rod mill on May 18, 1973. The variance gave the company one year to test a British invention expected to reduce chlorine fluxing emitted to the air. Chlorine was forced through the molten metal to remove impurities, which created a visible white particulate. According to Charles Taylor, the assistant plant manager, AAC was investigating new filter systems under development by Alcoa and British Aluminium, and the plant wanted to try the British version.<sup>127</sup> The company requested a one-year variance so it could complete engineering studies and the design and installation of new equipment to reduce the visible emissions of fluxing particulates. AAC officials stated that “there will be no danger to the public health or safety in the interim.”<sup>128</sup>

## **Pollution control limitations**

While AAC’s scientists and engineers reviewed various pollution control equipment and their costs for the smelter, the company mounted a public relations effort that in part depended on conducting its own fluoride investigations, with its own scientists and equipment, and with its own results. In early July 1970, AAC General Manager Charles Taylor announced that at the request of the company, a group of scientists had inspected parts of Glacier Park for damage by fluoride emissions from the plant.

Samples were collected for analysis, and later the group reported that no evidence of fluoride damage had been detected. Three of the scientists came from the Boyce Thompson Institute in Yonkers, N.Y., and the University of Utah.<sup>129</sup> According to its mission statement, the Boyce Thompson Institute was formed to study plant life for the benefit of mankind, but it often worked on the side of aluminum companies facing air pollution litigation. The Institute began a fluoride study for Alcoa in 1951 and provided data for Harvey Aluminum in a pollution case brought against the aluminum smelter at The Dalles, Ore., in 1961.<sup>130</sup> A few days after the initial announcement, Taylor reported that the scientists had found no evidence of damage to vegetation in Glacier Park by fluoride. Taylor said fluoride levels found in samples from conifers in Glacier Park were “significantly below those associated with injury.”<sup>131</sup>

A well-publicized investigation of Teakettle Mountain – the notorious symbol of smelter pollution – took place on July 20, 1970, when Taylor led a group of visitors in pickups and four-wheel-drive vehicles up the east side of mountain. The 21 members of the group included reporters from newspapers, radio and television, Forest Service rangers and scientists hired by AAC to study impacts by fluoride emissions on vegetation surrounding the plant. “Insect damage is prevalent in lodgepole pine on the east side of Teakettle Mountain, while on the Anaconda Aluminum Co. side, fluoride destruction of trees is obvious,” the Hungry Horse News reported. Michael Britton, whose title had elevated from biology teacher to plant pathologist and biologist at Flathead Valley Community College, showed the group lodgepole pines damaged by larvae of the sugar pine tortrix and white pines affected by both blister rust and sugar pine tortrix. When asked if insects attacked trees weakened by fluoride, Britton replied, “No, the larvae show no such preference.” He explained that damage by insects was easily confused with damage by fluoride.<sup>132</sup>

Britton’s statements were backed up by George Edmunds, the former chairman of the biology department at the University of Utah, and Dave MacLean of the Boyce Thompson Institute. As the group surveyed the scene from high above the plant, a visitor asked Taylor about the smoke hanging over the buildings. Taylor replied that the smoke consisted mostly of hydrocarbons, since fluorides were not visible, and that hydrocarbon emissions were difficult to reduce. Taylor also explained the plant’s use of Ducon Venturi scrubbers, which recently were installed at the plant on a test basis and had proved to be satisfactory. The plan called for a Ducon Venturi scrubber to be installed as a booster at each of the 30 wet scrubber towers already in operation at the plant. This would improve pollution control of fluoride emissions from 92% to 98.5%, he said.<sup>133</sup> On July 22, 1970, the Missoulian reported that Britton had attributed damage to trees on the east side of Teakettle Mountain to insects, not fluoride. Britton blamed the sugar pine tortrix, whose larvae ate new needles on conifers, and the needleminer, a

microscopic insect that burrowed into needles. The kind of damage these insects caused was often confused with damage caused by fluoride, he said.<sup>134</sup>

The Daily Inter Lake published a lengthy article on air pollution problems at the AAC plant on July 26, 1970. "It's no secret – the Anaconda Aluminum Co.'s Columbia Falls reduction plant is faced with a serious air pollution problem," Jim Petersen wrote. "However, the fact the company is presently attempting to solve its problem is one of the best kept secrets in Montana." Petersen said AAC was reluctant to discuss the problem and vigorously denied charges of air pollution, but he was able to get Charles Taylor to talk about AAC's efforts. "You bet we've got a problem with air pollution," Taylor said. "It's a monstrous problem and it's unsightly. It's high time we did something about it – but it's also high time the public be made aware of our efforts." Taylor added, "We all live in this community. It's a beautiful place and I, for one, want it to stay that way." Most of AAC's research on fluoride pollution was being conducted by the Boyce Thompson Institute. Bernard Kostelnik, the Anaconda Company's chief counsel, denied that the institute's scientists had been bought off, but he admitted that Anaconda controlled what the scientists said publicly. "We hire them to take advantage of their talents, not to handcuff their efforts," he told the newspaper. Kostelnik noted that when Clancy Gordon reported finding vegetation in Glacier Park with 400 ppm fluoride, he was invited to join AAC's study team. So far, Kostelnik said, Gordon had not responded.

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Kostelnik said AAC had also asked for a joint study with the National Air Pollution Control Administration and had gotten no reply. Regarding public criticism locally, Taylor said, "I don't blame them. The smog looks like hell. But it is an economic fact of life that we are not technically capable of solving at the present time." AAC had until July 1, 1973, to meet Montana's new fluoride emission standards of 864 pounds per day at full production. Taylor said he expected the plant to reach 2,500 pounds per day by 1972. "Beyond that, I wouldn't make any predictions," he said. "I think it's wrong for a company to threaten to shut down in this sort of situation. But by the same token, I have a heck of a time siding with the radicals who seemingly have no trouble at all equating the value of a tree with a man's family income."<sup>136</sup>

Taylor said the new Ducon Venturi scrubbers installed at the smelter showed promise in dealing with particulates, and they had been installed on one of the wet scrubber towers for testing. The equipment forced pot gases under high pressure into a restricted space, which slowed their velocity and caused fluoride particulates to drop out. The particulates then went to a treatment tank where they were neutralized with lime, precipitated out of solution in a clarifier and pumped to a settling pond. Taylor pointed out that no water was taken from the Flathead River for the process, and no wastewater

went into the Flathead River. Petersen noted that in addition to pot gases, about 25 million to 30 million cubic feet of gas and particulates escaped through the clamshell roofs of the 10 pot rooms every minute, adding up to 1,500 to 2,000 pounds of fluoride emitted per day.<sup>137</sup>

When asked if AAC could deal with the rooftop emissions, Taylor told the Daily Inter Lake that “like most industries, AAC operates on a marginal profit and borrowed money,” and that the Anaconda Company was facing difficulties with its profitable copper mine in Chile because of threats of nationalization by the government there. Taylor said AAC maintained 17 fluorine gas monitoring stations and 12 using sodium bicarbonate for testing. He also noted that several scientists from the Boyce Thompson Institute had joined Michael Britton in a tour of the east side of Teakettle Mountain, Desert Mountain, the Lake Five area and the Coram area. They all unanimously agreed that brown needles on trees in those areas were caused by insect infestations – there was no evidence of fluoride pollution, but they had found evidence of sugar pine tortrix and needleminer insects.<sup>138</sup>

Evidence of fluoride impacts had been found on the west side of Teakettle Mountain just above the plant, the AAC officials confirmed. “No question about it,” Britton told the newspaper. “There’s extensive fluoride damage on the west side of Teakettle. We also found evidence in the Columbia Falls area itself.” Britton and Boyce Thompson scientist George Edmund insisted they could not be bought by the Anaconda Company. “I cannot and will not be bought,” Britton said. “I’m a scientist. I’m after answers. Whether they come out for or against Anaconda doesn’t concern me. That’s not my job.” Edmund said conditions had vastly improved since his last visit in 1969, and the new state standard should protect the local economy. As for the health of AAC workers, the plant conducted annual physicals and had found no evidence of injuries caused by fluoride. The scientists also noted that a plan to use computer modeling to relate allowable fluoride emissions to local weather conditions had been scrapped because of insufficient meteorological data.<sup>139</sup>

## **Taking it personal**

Gordon’s differences with the Anaconda Company often moved from the scientific to the personal. The feeling may have been mutual. On July 29, 1970, Bernard Kostelnik responded to letters from Gordon regarding requests to tour the AAC smelter with college students. Kostelnik said they must ask for permission ahead of time because of safety concerns. “As you are well aware, despite your open hostility to industry generally and to Anaconda in particular, we’ve never refused you access to the plant in the past,” Kostelnik said.<sup>140</sup> Gordon wrote back to Kostelnik on Aug. 12. “As I have stated on numerous occasions to personnel of the Anaconda Aluminum Co., I have no

open hostility toward industries which are demonstrating an honest concern toward ending their environmental destruction," he wrote. "Speaking more generally, Berny, I believe it is men such as yourself who live in an uninhibited city such as New York (where air pollution was so extensive last week that Mayor Lindsey called an emergency pollution state) that have a vendetta against your fellow men and all other living species. My only vendetta is toward the apathy of men who collect their salaries with no regard for their fellow men or to the environment which we live in and, hopefully, that our progeny will be able to survive in." <sup>141</sup>

Gordon's outspoken opinions and public appearances made him loved or loathed, depending on whether a person supported the AAC smelter or the forest environment, and he continued to receive letters from fans, critics and the curious. On June 30, 1970, Doug McLean, who lived at the base of Columbia Mountain about three miles south of the AAC smelter, wrote to Gordon about a Douglas fir tree on his property that was turning brown. McLean said mostly small trees appeared to be dying. He said that ever since AAC installed more potlines, he noticed more smoke reaching his property and hanging in the morning air. He said there were fewer dying trees about a quarter of the way up Columbia Mountain. "So far it seems that all AAC will admit to ruining is the trees on Teakettle Mountain," McLean said. "If people here could see damage on Columbia, maybe they would wake up and more would speak out against the plant." <sup>142</sup> Gordon wrote back to McLean on July 2 and explained some of the results from his investigations. "What this report says is that there is a large concentration of fluoride in the ambient air in the Columbia Falls area which is being incorporated into the vegetation growing in that area," he wrote. Animals that eat impacted vegetation will also be affected. He suggested that McLean contact the Dehlboms, who were suing AAC about air pollution impacts to their property near the plant or, if he didn't want to sue AAC, to contact Benjamin Wake at the Montana Board of Health's Air Pollution Control Division. <sup>143</sup>

On Sept. 1, 1970, Bob Muth wrote to Gordon about AAC's recent "half day 'comprehensive' study" of fluoride impacts in Glacier Park that concluded there was no pollution problem in the Park. Muth remarked that the "AAC paid consultants, including the amazing and two-faced Dr. Britton of FVCC (to give the team a local flavor), and took the news media and local citizens on a field trip." Muth added, "Buying Dr. Britton was a brilliant move on the part of Anaconda." <sup>144</sup> Gordon responded on Sept. 4. "I agreed with your statement that buying Britton was a brilliant move, as I understood his part in the community and at the college," Gordon said. "As you see, we are dealing with professional dollars and 'scrupulous' men." <sup>145</sup>



Faced with difficult air pollution problems at home and nationalization of the Anaconda Company's copper mine in Chile, Columbia Falls residents next learned about the company's investment in a new smelter in Sebree, Ky. The Hungry Horse News commented on the Kentucky smelter in a long July 31, 1970, editorial. The Sebree smelter was the first smelter since World War II that was engineered by Alcoa but which it would not own or operate. Alcoa was also the general contractor for construction of the Sebree plant. The new smelter would incorporate the latest improvements in aluminum smelting technology, including prebake anodes and new pollution control systems that could work with prebake systems. The AAC plant in Columbia Falls was built in the early 1950s and used vertical-pin Soderberg type anodes – technology perhaps considered the best in the early 1950s but not by the mid-1960s. "Mystery is why did Anaconda install the same process in its fourth and fifth potlines in 1967-68 and thus invite the pollution controversy of today," the Hungry Horse News asked. With more stringent air pollution regulations in Montana than in Kentucky, the editorial suggested that the future of AAC lay in Sebree, not in Columbia Falls. In fact, many AAC employees were already being sent from Columbia Falls to work at the new smelter. The editorial wanted to know if AAC still planned to spend \$600,000 to purchase 29 more Ducon Venturi scrubbers for the Columbia Falls plant in the fall of 1970, and whether it intended to comply with the state's proposed fluoride emissions standards.<sup>146</sup>

AAC President Joseph B. Woodlief responded to the Hungry Horse News several weeks later. The strength of the plant in Columbia Falls was improved by construction of the new smelter in Sebree, he said. A second smelter gave AAC more primary aluminum to use in its fabricating facilities, including a new plant in Henderson, Ky., near the Sebree smelter. The overall effect would be to strengthen the company, and this would help the Columbia Falls plant as well, he said. Woodlief also addressed the air pollution problem facing the Columbia Falls smelter. The problem was nationwide in scope, and corrective measures were being taken by all industries, he said. A technological solution needed to be found first, and then the cost of implementing the solution had to be economical. The new plant in Sebree was being engineered by Alcoa to be the most pollution-free aluminum smelter in the nation, Woodlief said.<sup>147</sup> The Hungry Horse News, however, remained skeptical. On Sept. 18, 1970, the newspaper predicted bigger headlines and more comment in the media, especially after the federal government completed its study of the impacts of fluoride on Glacier Park. "There is reason to wonder about the future of Anaconda Aluminum Co. in the Flathead," the editorial said. "Is an aluminum plant compatible with recreational area, and how much state agency and economic harassment will the industry take?"<sup>148</sup>

Evidence showing the smelter's impacts on Forest Service lands and Glacier Park accumulated through 1970. NAPCA, the predecessor to the Environmental Protection

Agency, which was established on Dec. 2, 1970, utilized extensive meteorological data to confirm data collected by the Forest Service on fluoride distribution in the area.<sup>149</sup> If AAC was unable to come up with a workable pollution control system for its Columbia Falls smelter, or the state of Montana was unable to establish strict air quality standards and enforce appropriate regulations, the federal government was preparing to go to court and defend its National Forest and National Park lands. Recognizing sweeping changes at home and across the U.S., the Hungry Horse News chose statewide air pollution control measures, including a ban on backyard trash burning, a ban on smoking sawmill tepee burners, and a new state standard for fluoride emissions at the AAC plant of 864 pounds per day, as the top news story for the 1970. While AAC had reduced fluoride emissions from a high of 7,500 pounds per day in 1968 to 2,500 pounds by early 1971, local residents had filed air pollution lawsuits against the company totaling \$25.6 million.<sup>150</sup> These lawsuits came in two forms – individual claims for property damage and an area-wide class action lawsuit. The latter made history, but it drew little local support and fell into the hands of a judge who had warned about aluminum plant emissions two decades earlier.

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<sup>1</sup> “1969,” Hungry Horse News, Dec. 22, 1972[AL0955]

<sup>2</sup> “Environmental Impact Statement for the air pollution variance requested by the Anaconda Aluminum Company for its aluminum reduction plant at Columbia Falls, Montana,” Montana Department of Health and Environmental Sciences, May 20, 1974 [AL0439]

<sup>3</sup> “Nearing 700,000 visitors,” Hungry Horse News, Aug. 8, 1969 [AL1103]

<sup>4</sup> “Park installing pollution lab,” Hungry Horse News, June 6, 1969 [AL1095]

<sup>5</sup> “Dr. Gordon feels AAC damaging Glacier Park,” Hungry Horse News, March 10, 1972 [AL0924]

<sup>6</sup> Interrogatories for U.S. v Atlantic Richfield Co. and the Anaconda Company, Civil Action No. 78-80-M, 1978 [AL4635]

<sup>7</sup> Memo by C.J. Martinka regarding air pollution meeting with Glacier National Park staff and A.W. Hook, National Archives and Records Administration, Feb. 6, 1969 [AL5562]

<sup>8</sup> “Says fluoride damage not visible in Park,” Hungry Horse News, Jan. 2, 1970 [AL0984]

<sup>9</sup> Memo from Glacier National Park Superintendent William J. Briggie to National Park Service Regional Director Fred C. Fagergren, Midwest Region, Dec. 19, 1969 [AL5480]

<sup>10</sup> Sam Reynolds, “Anaconda aluminum smelter under the gun,” Missoulian, Jan. 25, 1970 [AL0313]

<sup>11</sup> “From Anaconda Co., vegetation in Glacier damaged by fluorides,” newspaper clipping in Clarence Gordon papers, Dec. 25, 1969 [AL4610]

<sup>12</sup> Record of phone conversation between Anaconda Aluminum Co. environmental manager A. Warren Hook and Glacier National Park Superintendent William J. Briggie, Dec. 29, 1969 [AL5481]

<sup>13</sup> Deposition of Dr. Clinton Carlson in U.S. vs. Atlantic Richfield Co. and the Anaconda Company, Cause No. CV-78-80-M, Dec. 21, 1979 [AL4634]

<sup>14</sup> “Insects damage trees,” Hungry Horse News, June 13, 1969 [AL1096]

<sup>15</sup> “Industry survives storm,” Hungry Horse News, Jan. 3, 1969 [AL1088]

<sup>16</sup> Brian Kennedy, “Anaconda named in complaint; court suit seeks fewer emissions,” Hungry Horse News, Nov. 9, 1978 [AL0459]

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- <sup>17</sup> "Tree plantation having problems" and "Frost damages larch and fir," Hungry Horse News, July 11, 1969 [AL1099]
- <sup>18</sup> Reynolds, Jan. 25, 1970 [AL0313]
- <sup>19</sup> "Forest Service schedules fluoride damage study," Hungry Horse News, Oct. 3, 1969 [AL1112]
- <sup>20</sup> "Show 1,100 acres fluoride kill on Teakettle Mt.," Hungry Horse News, Oct. 24, 1969 [AL1122]
- <sup>21</sup> "Fluoride harming Falls vegetation," Hungry Horse News, Nov. 14, 1969 [AL1125]
- <sup>22</sup> Reynolds, Jan. 25, 1970 [AL0313]
- <sup>23</sup> "Forest Service finds excessive fluorides," Hungry Horse News, Feb. 13, 1970 [AL0994]
- <sup>24</sup> "Forest Service starts new fluoride study," Hungry Horse News, April 17, 1970 [AL1003]
- <sup>25</sup> "Comments on pollution," Hungry Horse News, Feb. 28, 1969 [AL1089]
- <sup>26</sup> "Hearing talk on pollution," Hungry Horse News, April 4, 1969 [AL1090]
- <sup>27</sup> "Urges population curb, better pollution control," Hungry Horse News, May 30, 1969 [AL1092]
- <sup>28</sup> "Federal grant for toxic study on plant life," Hungry Horse News, June 6, 1969 [AL1094]
- <sup>29</sup> "Pines look sick," Hungry Horse News, June 6, 1969 [AL1093]
- <sup>30</sup> "Fluorides killing ponderosa pine trees in Flathead," Hungry Horse News, July 4, 1969 [AL1097]
- <sup>31</sup> "Year ago and now, fluoride, insects damaging pines at H.H. News," Hungry Horse News, Aug. 28, 1970 [AL1037]
- <sup>32</sup> Hungry Horse News, July 4, 1969 [AL1097]
- <sup>33</sup> Hungry Horse News, July 11, 1969 [AL1099]
- <sup>34</sup> "Use truth to win air pollution battle," Hungry Horse News, July 18, 1969 [AL1101]
- <sup>35</sup> Letter from James Oleson to Clarence Gordon, Aug. 20, 1969 [AL4616]
- <sup>36</sup> Reynolds, Jan. 25, 1970 [AL0313]
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