

Chapter 32

Fouling the Big Sky

Montana, Big Sky Country, attracts millions of tourists today, many of whom enjoy driving through huge landscapes under sunny blue skies in summertime. Once in a while, they are driven away by dense smoke from forest fires, but the idea that the mountain valleys of western Montana were once blanked out by a polluted haze, or that thousands of acres of land could be covered with hazardous chemicals emitted by industry – that’s ancient history. Montana’s industrial beginnings were in railroading, timber, mining and mineral processing. After several decades of intense competition, the Anaconda Company won the “War of the Copper Kings” and began to dominate the Montana economy. With that economic dominance came powerful political influence. Early cases of air pollution were handled by local governments or through lawsuits brought by ranchers and farmers. In hindsight, these cases should have been a slam-dunk for the plaintiffs, but money and political influence delayed or impeded justice. It wasn’t until the 1960s that serious steps were taken to rein in industrial pollution by timber mills, pulp plants and smelters, and that only came about after a small group of outspoken and educated citizens promoted the need for air pollution regulations. They were helped by a few cases of outrageous polluters that the public and state government could not ignore and a growing movement across the U.S. calling for clean air legislation.

The prominent Montana historian K. Ross Toole summed up pollution and Montana this way: “Air and water pollution in Montana are very old. One commentator described Butte in the 1870s thus: ‘...on a windless day the smoke lay so heavy at mid-day that lamps were burned and thieves were as fearless at noon as at midnight.’ (In 1891) when the Boston and Montana Company began roasting an unusually huge mass of ore, fifteen people died within forty-eight hours, and hundreds grew violently ill. Then, and only then, were the mining companies enjoined from open pit roasting.”¹

Early in Butte’s industrial development, the main source of air pollution was heap roasting, a cheap and reasonably efficient first step in the processing of Butte’s copper ore. Lumps of nearly pure copper sulfide ore were stacked with cord wood in mounds as big as a city block and set on fire. According to Donald MacMillan’s account of the time, “Smoke Wars: Anaconda Copper, Montana Air Pollution, and the Courts, 1890-1924,” the heaps burned and smoldered over a period of several weeks, removing about 92% of the sulfur from the ore, while releasing clouds of toxic smoke and fumes containing sulfur, arsenic, particulates and fluorides.² This deadly haze alarmed residents – in

1885, women in Butte protested the “clouds of sulfur smoke which hung over the city Sunday night” that killed flowers and plants.³ In 1885, cattleman Granville Stuart described the atmosphere of Butte as a “pall enveloping everything in midnight darkness and almost suffocating.... We could not see and we could scarcely breathe.” Butte, nicknamed the “Richest Hill on Earth,” located near the Continental Divide at more than 5,000 feet elevation, was susceptible to severe weather inversions, particularly in winter, which trapped air pollutants. Between 1885 and 1890, copper production in Butte doubled from nearly 34,000 tons of concentrate to about 56,500 tons as mines consolidated and out-of-state corporate entities took control. By 1890, six of the world’s most modern and productive copper smelters were in Butte, blanketing the Silver Bow valley with a thick poisonous smoke.⁴

The smelter kings

Most residents were critical of the pollution, but copper magnate William A. Clark credited the smoke with disinfecting the city, saying that “it would be a great advantage for other cities... to have a little more smoke and business activity and less disease.” The smoke had a cosmetic effect as well, Clark told the Montana Legislature, “because there is just enough arsenic to give (the ladies of Butte) a beautiful complexion.” But from July through October 1890, pneumonia or typhoid was the official explanation for 192 deaths in Butte that most residents blamed on the smoke, according to MacMillan. The city health officer began publishing the monthly death rate in September 1890. The pollution climaxed by winter with 28 weather inversions in December alone. As residents protested and at least one newspaper took on the cause, experts traveled to Butte to present technical solutions to the problem. The smelter owners resisted. Henry Williams, superintendent of the Colorado Smelting and Mining Co., argued that “the smelter might as well close up” than adopt any of the proposed pollution control measures. Williams had no sympathy for the city’s residents, saying, “The Colorado company was here before most of the residents, and those who came in later knew what to expect.” Williams also argued that smoke from smelting didn’t pose a health risk – he cited the case of a cow “which had thrived for fourteen years in the midst of the smoke but had died immediately on being taken out of it.”⁵

City officials took a first step to regulate smelter emissions on Dec. 17, 1890, when an ordinance was passed banning heap roasting – ores had to be roasted in stalls and the smoke had to pass through chimneys or stacks at least 75 feet high. Critics of the ordinance called the height inconsequential, but to others the ordinance was seen as an important first step – the city council had established its position in regulating smelter emissions, and all that remained was to discover a device that could be placed in the stacks to control air pollution, according to MacMillan. By early 1891, as the city ordered

the ordinance to be enforced, one smelter closed down. The real cause of the closure, as a newspaper editorial explained, was weak demand in the world copper market and a surplus of inventory by copper producers, not the new ordinance. The editorial went on to suggest that even if the smelters shut down over the new ordinance, “it would have little effect. Butte has made up its mind on this smoke question and has already adopted a policy. It is simply a question of the survival of the fittest.” The implication was that companies with a solution to the pollution problem would succeed in Butte’s copper industry.⁶

In early March 1891, two smelter companies, the Butte & Boston and the Boston & Montana syndicates, ignored the new ordinance and fired up their ore heaps, enveloping the city in a gray blanket of smoke and fumes, according to MacMillan. During the first three months of 1891, a total of 246 people in Butte died of respiratory ailments blamed on the smoke. Residents in the Meaderville neighborhood, at the north end of the city above many of the smelters, petitioned the city government to enforce the ordinance and to extinguish the heaps – one of the city councilmen was the superintendent of Butte & Boston, they noted. The majority of the city’s residents were divided between a desire to end air pollution and recognition that out-of-state capital was necessary for industrial and commercial development, including fresh water, streets, lights, transportation, sewers and police. As a result, city officials were slow to respond.⁷

Boston & Montana began construction of a modern reduction plant in Great Falls in 1891 with the idea of concentrating ores as much as possible in Butte before shipping them north by rail. In the meantime, the company continued with its notorious practices. By mid-December 1891, with the normal winter weather inversions in place, and despite efforts by city officials to negotiate, Boston & Montana fired off its heaps and the superintendent abruptly left town to avoid arrest, according to MacMillan. “Heap roasting is nothing more nor less than attempted murder,” a front-page newspaper article claimed. “That is the plain English of it.” Talk of vigilante action spread as the smoke covered the city and reduced visibility to half a city block, but with the company’s management absent the city government was unable to enforce the ordinance. Finally the courts invoked a permanent injunction, and the city sent 142 men to extinguish the Boston & Montana heaps, along with a police force to guard the company’s facility from angry mobs. It took three days to put out the burning ores at a cost of \$2,500. A total of 21 people died in Butte from respiratory problems since Boston & Montana’s last heaps were ignited. The incident marked the end of heap roasting in Butte. By the end of 1892, copper production in Butte increased by 60%, but more than 40% of that increase was from ore smelted in the new town of Anaconda, west of Butte at the head of Deer Lodge Valley. In 1906, the Butte & Boston and the

Boston & Montana syndicates began shipping all their ore directly north to Great Falls without prior processing, and finally a noticeable change in the air pollution in Butte took place.⁸

Farmers under ‘The Stack’

In 1883, using \$4 million from investors Ben Ali Haggin and George Hearst, Marcus Daly built and began operating the world’s largest copper smelting plant west of Butte in Anaconda as the Anaconda Copper Mining Co. The Atlantic Richfield Company, which acquired the Anaconda Company in the 1970s, closed down the copper smelter in September 1980. Left standing was a 585-foot tall smelter stack – the world’s largest chimney. Known as “The Stack,” it was built after numerous lawsuits were filed against the smelter by landowners who claimed injuries to livestock and crops by arsenic-laden fumes. Over the years, the Anaconda Company bought up surrounding land from ranchers who claimed damages by the smelter fumes.⁹ Marcus Daly filed a plat for the new smelter city on June 25, 1883. His new smelter would be built on Warm Springs Creek, about 26 miles from the Butte copper mines. Within a month, 1,500 residents were busy in the new city’s brickyards, lumberyards, sawmills, shops and other businesses. Over the next 15 years, three smelters were built in the Warm Springs valley. The first, the Upper Works, could handle 500 tons per day and was situated well up the valley. The second, the Lower Works, could handle 3,000 tons per day and was built closer to the mouth of the valley where it intersected with the Deer Lodge Valley. The location and prevailing winds in that area led to few reports of damages by fumes from the first two smelters.¹⁰ By one account, reports were made in 1893 of cattle near Anaconda that had developed what was called “copper teeth” caused by air pollution from the nearby smelter.¹¹

Standard Oil purchased the Anaconda Company in 1899, which continued operating as the Amalgamated Copper Mining Co. Under the new owners, a giant modern smelter was built on a ridge on the opposite side of the Warm Springs valley from the first two smelters. The Washoe Copper Smelter cost \$9.5 million and was capable of processing 7,000 tons of sulfur-laden copper ore per day, about two-thirds of all the ore mined in Butte. The new smelter began operating in 1902. Emissions from the smelter’s original 300-foot stack blew into the Deer Lodge Valley and across miles of adjacent National Forest lands. Farmers, ranchers and the federal government brought lawsuits against the Anaconda Company, and as the cases moved ahead in the courts, the company promised mitigations, delivered on a few of them and eventually bought out the Deer Lodge Valley farmers and swapped lands with the Forest Service, according to MacMillan. Technical solutions were proposed but never followed through. The company dominated the Anaconda Smoke Commission, which was given the

responsibility to monitor the impact of smelter emissions on the area, and finally in 1910 the company gained “smoke rights” from the Deer Lodge Valley farmers.¹²

Within a few months after the Washoe Copper Smelter’s furnaces fired up on Jan. 25, 1902, Deer Lodge Valley farmers noticed peculiar diseases in their livestock. “In 1902, the copper smelter in Anaconda provided a fatal meal of arsenic on grass to large numbers of cattle, horses and sheep,” the National Tuberculosis and Respiratory Disease Association reported in 1969. “Fifteen miles from the smelter, where 3,500 sheep grazed, 625 of them died. And too far away from the smelter to be directly affected, horses met death from tainted hay.”¹³ An estimated 29 tons of arsenic trioxide and substantial quantities of sulfur dioxide, copper, antimony, lead, zinc and other metals or compounds blew toward the valley. By November 1902, several hundred horses and cows had died across the valley, including 60 animals at one ranch.¹⁴ On Jan. 8, 1903, the Butte Reveille newspaper reported that “it hasn’t been a very good year for cows, for the poisonous fumes from the smelter had killed most of the cattle in the valley of the Deer Lodge.”¹⁵ By spring 1903, the Bielenberg ranch, one of the largest in the valley, had lost about 1,000 cows, 20 horses and 800 sheep to the Washoe smelter’s emissions, according to MacMillan. The Deer Lodge Valley farmers requested advice from two chemists who found that arsenic had accumulated on forage during the dry months of autumn and killed the livestock. The Montana state veterinarian inspected the dead animals and agreed with the chemists. Confronted by the ranchers, the Amalgamated Copper Mining Co. paid \$330,000 in damages for the year 1902, but many of the farmers felt cheated and refused to settle.¹⁶ That’s when smelter manager Edward P. Mathewson decided to shut the plant down “to avoid paying claims to farmers for smoke damage,” according to Gordon Bakken’s 1991 account in “Montana, The Magazine of Western History.” The huge smelter had been on line since 1902, processing about 7,000 tons of copper ore each day.¹⁷

The Washoe smelter closed from July to September 1903 while a new flue system and stack was built. Publicly the company claimed the new flue system was intended to prevent air pollution, but evidence existed showing that the new flue system helped the company recover lost metal. Flue dust contained significant quantities of copper, gold and silver, and periodically the company sent crews up on the nearby hills to sweep the grounds for copper to re-smelt.¹⁸ Amalgamated replaced the smelter’s four 225-foot high smokestacks with one 300-foot high 31-foot diameter stack mounted 1,100 above the valley floor and connected to the smelter by a flue system more than 2,300 feet long. Within the flue system were collection chambers where workers worked continuously to remove dust, and a three-furnace plant to capture arsenic. The smelter manager, Edward P. Mathewson, assured a U.S. attorney in Helena that “the Washoe smelter, in Anaconda, is the only one that has taken steps to cope with the smoke

nuisance in a proper way.”¹⁹ By the time the new emissions system and the largest smoke stack in the world went into operation, more than \$300,000 in damages had been paid out to area farmers and ranchers in out-of-court settlements. With \$725,000 worth of the latest in emissions control equipment in place, claims against the company ceased until 1905.²⁰

Complaints from the Deer Lodge Valley farmers were raised again in autumn 1904, while Amalgamated declared the new emissions control system a success. Apparently the tall stack emitted the pollutants high in the atmosphere where different prevailing winds carried them further and to different areas. On some days the smoke could be seen settling into the Deer Lodge Valley less than a mile away, and on other days the smoke hung over the valley as a haze. The farmers and ranchers made their complaints known to the company, which responded with evasion and noncommittal pronouncements, according to MacMillan. One farmer was told by Washoe’s general superintendent that if the company paid his claim, then it would have to pay all claims. Finally the company just told the farmers to go to court. On Feb. 21, 1905, local farmers and ranchers banded together to form the Deer Lodge Valley Farmers Association in order to take their case to court. The members owned more than 90% of the valley’s agricultural lands and felt they had prior rights because they had settled in the valley before the smelter was built. The association’s executive committee offered to settle all claims for about \$1,175,000, which would include title to 60,525 acres along with water rights and improvements. The association explained that the farmers had delayed taking their claims to court because the company had assured them the new flue system and stack would control air pollution. Amalgamated refused to reply to their complaint and publicly warned that it would bankrupt the farmers if they took their complaint to court, according to MacMillan.²¹

Suing ‘The Company’

In 1905, the farmers and ranchers organized and filed the Fred J. Bliss v. Anaconda Copper Mining Co. and Washoe Copper Co. lawsuit, claiming emissions from the smelter were killing livestock and crops and generally blighting the land.²² In order to get around local and state judges who might rule in favor of the company, the Deer Lodge Valley Farmers Association located a farmer named Fred J. Bliss who lived in Idaho but owned property in the Deer Lodge Valley. Once Bliss became part of the lawsuit, it fell under federal jurisdiction. The association enlisted the assistance of V.K. Chestnut, a botanist and chemist at the Agricultural College in Bozeman. On March 4, 1905, the association sent a letter to Amalgamated alleging \$1,120,731 in verified claims and offering to sell the claimants’ property for \$918,147. The company did not reply, and the association sued on May 4, 1905.²³ The farmers association considered this first lawsuit

a test case, but it sought a permanent injunction against the Washoe smelter on the grounds that its emissions damaged crops and livestock in an area encompassing more than 100 square miles of improved farmland.²⁴ The case dragged on from 1905 to 1909 and came to be known as the “Smoke Cases.” The manner in which the case was handled in court and dragged on for so many years under the direction of Cornelius F. Kelley was regularly covered by Jerre C. Murphy in his newspaper, the Montana Lookout, which he later condensed into a chapter of his book “Comical History.”²⁵

Joining Kelley in the company’s defense was Lewis Orvis Evans, a veteran of the Heinze-Amalgamated copper king war. The two also were owners of the Kootenai Lodge on Swan Lake in the Flathead Valley. Kelley was trained as both an engineer and a lawyer and was considered the fastest rising star in the battle of Butte, according to Gordon Morris Bakken’s account “Was There Arsenic in the Air? Anaconda Versus the Farmers of Deer Lodge Valley.” Kelley intended to employ the well-established common law nuisance defense, which required that the benefits of the company’s business outweighed the harm caused to farmers and ranchers. But Kelley needed scientific evidence to prove that the smelter’s emissions were as clean as technically possible. The amount of technical detail delivered in the company’s defense was expensive, but it also tended to quiet down the press.²⁶

Kelley presented a number of arguments, according to MacMillan. First, the Amalgamated Copper Mining Co. had installed the new flue system and stack to aid the farmers. Second, the company had already paid \$300,000 in claims. Third, Kelley denied that the Deer Lodge Valley farmlands in the smoke zone were ever rich or fertile. Fourth, Kelley denied that substantial quantities of injurious arsenic or sulfur dioxide were ever deposited in the smoke zone. Fifth, Kelley warned about the dire economic consequences that an injunction would have on the mining and metal processing industry in Butte and Anaconda, as well as the state of Montana, the nation and even the world. Kelley pointed out that 8,000 workers were dependent for their livelihood on the smelter and its mines, that the company paid out \$7 million in wages, and about a quarter of the taxes collected by the state came from the company’s operations. Finally, Kelley argued, a business had the right to pollute, saying, “Our position about that matter has been that there is no legal objection to a pollution of the atmosphere until it results in damage to somebody, which gives him the right to formulate a cause of action or to complain. We have a perfect right to carry on a legitimate business, and if incidentally we should pollute the atmosphere, nobody has the right to complain until a specific damage gives him a cause of action.”²⁷

Kelley’s tactics were described as wasting time, making fools of the plaintiff’s witnesses and creating a carnival atmosphere intended to frustrate and wear out everyone in the

court, according to Thomas Charles Satterthwaite's 1971 master's paper on Cornelius Kelley. In one example, on March 14, 1906, Kelley let University of Montana chemistry professor William Harkins testify for two days straight about mathematical modeling that proved emissions from the new stack would land on the ranches in question. During the whole time, Kelley withheld that he knew about baffling in the smokestack that would alter the velocity of the stack's emissions and render all of Harkins' calculations absurd. By waiting until the end of Harkins' testimony, Kelley wasted more time as he obliterated the plaintiffs' expert testimony.²⁸ The Bliss case hinged on the testimony of expert witnesses, but the farmers lacked the finances to hire the most able experts. Amalgamated's experts earned up to \$100 per day and were comfortably housed in the fashionable Montana Hotel in Anaconda. Judge Erskine Mayo Ross held the highest respect for the experts hired by the company, as they came from Harvard, Cornell and other prestigious institutions, according to MacMillan. The defense experts were seen by the farmers as members of the same class that drew wealth from the smelter, and these experts tried to confuse the issue by blaming crop and livestock damage on anything but smelter fumes.²⁹

John Ryan, who became the mining company's president in 1904, sought to tie up the farmers in court with expensive court costs in order to exhaust their funds. Amalgamated went so far as to have Montana Sen. Thomas Carter push a bill through the U.S. Senate that would double the cost of transcript records in federal courts. That increased the cost to farmers and ranchers in the Bliss lawsuit from \$15,000 to \$30,000. The company also sent a man out to Idaho in an attempt to pay off Bliss. As the only named plaintiff, successfully buying out Bliss would have ended the federal case in a single stroke, according to Satterthwaite. Amalgamated also went into the agriculture business to prove emissions were not a problem. The company established the Deer Lodge Valley Farms and showed the farm's crops and livestock each year at the Deer Lodge County Fair, which the company sponsored.³⁰

Amalgamated failed to purchase the property of the principal plaintiff, Bliss, or that of the leading farmers in the valley, including Nick Bielenberg and Conrad Kohrs. The company failed to bribe Dr. D.E. Salmon, a key witness for the plaintiffs, after offering him \$10,000 to desert the farmers. The company also fired any smelter workers and miners who were relatives of the Deer Lodge Valley farmers, according to MacMillan. Meanwhile, the company's newspapers carried on a campaign of ridiculing the farmers and praising the accomplishments of the company, pointing out that the Washoe smelter produced one-fifth of the nation's copper and about 10% of the world's copper. They described the Deer Lodge Valley farmers as lazy men who preferred to make money by lawsuits. Ironically, while Kelley argued in court that the farmlands in the Deer Lodge Valley were never fertile, the company press was doing the opposite.

Fearing that the smoke case would tarnish the reputation of farmlands in the valley and across the state, driving away new arrivals, the press and the mining company promoted the agricultural lands. Company men organized county fairs in Deer Lodge County and established experimental farms in the valley with imported livestock.³¹

By March 20, 1907, a total of 237 witnesses had testified in the case. The deciding factors in the case involved how well Kelley's technical experts performed, according to Bakken. The plaintiff's reliance on anecdotal evidence, such as stories about hens laying copper-coated eggs, and colorful witnesses such as Conrad Kohrs, the state's leading cattleman, hurt their case. When the plaintiffs' top chemists testified that more than 44,000 pounds of arsenic were emitted by the smelter every day, Kelley was able to undermine their methodology. He also succeeded in showing that the Deer Lodge farmers were guilty of poor animal husbandry. After 14 months of testimony, a special master delivered his findings on Jan. 10, 1908 – while evidence existed of damage by arsenic emissions, the Washoe smelter had done all it practically could to control pollution, the master concluded. If the smelter shut down, then mining in Butte would also shut down, causing more hardship than that felt by the Deer Lodge Valley farmers.

³² On Nov. 14, 1908, Judge William H. Hunt, the presiding judge in the smoke case, was entertained in Butte by many of the city's leading citizens, including Kelley and Ryan, according to MacMillan.³³ The plaintiffs had presented their case in 90 days, while Amalgamated took up nearly all the testimony during the three years and 11 months that the case was argued in court. On May 26, 1909, after 27,000 pages of testimony, Judge Hunt ruled in favor of the mining company and dismissed the case.³⁴

In rendering his decision, Judge Hunt used many of the same arguments presented by Kelley and Evans, according to MacMillan. Hunt focused on the economic argument and pointed out that a better location for the smelter could not be found. Amalgamated had built the smelter using the best known methods and processes at the time, Hunt said, and the new flue system and stack employed state-of-the-art improvements. Hunt viewed the plaintiffs' expert testimony to be inconclusive and indefinite. Hunt acknowledged that damage had occurred to livestock and crops prior to 1903, but after that date damage in the smoke zone was very slight, he said. Hunt assessed damages to the Bliss property at \$350. The case was taken to the appellate court in San Francisco where Hunt's decision was affirmed, leaving the farmers stunned. The case had cost the farmers \$200,000 in court and another \$50,000 for an appeal. For most Montanans, however, the decision was a relief because the Bliss case was seen as a drag on the prosperity of the Deer Lodge Valley. Economic growth and development was more important to most Montanans than the plight of the farmers and ranchers, according to MacMillan.³⁵

That wasn't the end of Amalgamated's emissions problems. Conrad Kohrs was a close friend of the President Theodore Roosevelt, and in late 1908 the Deer Lodge Valley farmers wrote to the President about the air pollution problems. News about the farmers' communication to the Roosevelt was given headline coverage by the mining company's newspapers, who accused the farmers of attempting to influence the Bliss case, according to MacMillan. The farmers' cause, however, found support in the Roosevelt administration, where conservation was an important issue. Progressives in the administration believed a fundamental fault in American society was the concentration of wealth in the hands of the few which held a monopoly on the nation's resources. This fault was worsened by the accelerating rate by which these natural resources were being consumed. By 1908, the condition of the nation's forests had become a concern in the Roosevelt administration, and copper smelters in Tennessee, Utah, California and Montana were seen as part of the cause. In 1906 and 1907, J.K. Haywood, a chief chemist for the federal government, had investigated the forests surrounding Anaconda with the assistance of a forester. His conclusions definitely contradicted those of Judge Hunt. Haywood found damage caused by the copper smelter in the Deer Lodge National Forest as much as 20 miles north, eight miles south and 13 miles west from Anaconda. Learning of all this federal government work, the Montana State Land Board took official action by arguing no timberlands in the state had been injured by the Washoe smelter.³⁶

The federal strategy

As the U.S. Justice Department began to gather evidence for a lawsuit against Amalgamated, it secured the services of Ligon Johnson, a Georgian attorney who had gained important experience in Georgia's lawsuit against the copper smelter in Ducktown, Tenn. After carefully examining the impact of copper smelters across the country, Johnson concluded that the worst destruction was taking place in Montana, including possibly 1,000 square miles of territory surrounding Anaconda. Johnson pointed out that vegetation around Butte had already been destroyed, while smelter smoke at Great Falls blew onto flat plains. Johnson also discovered the copper industry had accumulated about 150,000 tons of surplus copper that it was unable to sell at current prices. If the federal government initiated a lawsuit, the copper companies could easily shut down, blame the federal government and sell off its accumulated inventory, according to MacMillan. The government heeded Johnson's recommendations and delayed prosecution while it continued to gather evidence.³⁷

Haywood returned to the Deer Lodge National Forest, where he discovered even more damage, and shortly afterwards Chief Forester Gifford Pinchot and Agriculture Secretary James Wilson visited the area. Johnson drew up charges to be filed against

Amalgamated. His chief argument was that the company had moved its smelting operations from Butte to Anaconda for economic reasons, without trying to upgrade smelter operations in Butte. Johnson argued that a “perambulating agent” of destruction would continue, as the company moved from one site to another, spreading its pollution across the U.S., according to MacMillan. The Justice Department recognized that only the federal government could take on such a large company and force it to spend large amounts of money on pollution control. The government’s case focused on sulfur dioxide emissions, which they argued could be removed from smelter smoke, converted into sulfuric acid, combined with phosphate from Idaho to make fertilizer, and marketed to the growing agricultural industry of the West. Damage to the National Forests not only included stumpage values, the government argued, but also the cost of reforestation, destruction to soil quality, and the loss of “rental value” or productivity in timber and grazing.³⁸

A draft of the charges was sent to R.L. Clinton, the attorney for the Deer Lodge Farmers Association. Clinton by that time felt he could not trust even his own stenographer, and he warned the government about Amalgamated’s use of expert witnesses and technical evidence. On Dec. 5, 1908, President Roosevelt called a meeting at the White House in an attempt to mediate the case. Present at the meeting were Clinton, Bielenberg, Pinchot, Johnson, Ryan, Montana Sens. Carter and Joseph M. Dixon, Attorney General Charles J. Bonaparte and Solicitor General Henry Hoyt. Roosevelt presented three alternatives: 1) move the Washoe smelter to Great Falls; 2) move the incinerating part of the Washoe operation back to Butte, where the surroundings were already damaged; or 3) convert the sulfur dioxide fumes into fertilizer.³⁹

The Amalgamated officials were unimpressed, according to MacMillan. They argued the cost of moving the \$10 million smelter was prohibitive, and the methods used to remove sulfur dioxide at the Ducktown smelter would not work at the Washoe plant, which was six times larger. But Roosevelt was not impressed with the response from Amalgamated either. He recognized the Anaconda case was pivotal if the government was to proceed against other smelters, but numerous technical and economic questions remained. Most significantly, how was the government going to prove that making fertilizer was a viable option if the industry’s experts were unwilling to cooperate? The administration decided to pursue the lawsuit by asking that either the Anaconda smelter be shut down or the company be required to build a fertilizer plant. While the government investigated the feasibility of marketing fertilizer to farmers in the West, Amalgamated used delaying tactics in the hope of achieving better treatment at the hands of the new President, William H. Taft, who replaced Roosevelt in March 1909.⁴⁰

The new administration, while continuing to hold the same interests in conservation as Roosevelt, was soon bogged down in numerous large anti-trust cases, including one involving Standard Oil, the parent to Amalgamated. Johnson continued to investigate the Anaconda smoke case and soon discovered that the cost of converting the smelter fumes to sulfuric acid was cheaper than previously thought – about \$4 million, or about 3% of Amalgamated's \$155 million in capital stock, according to MacMillan. After Amalgamated rebuffed one effort after another by the government to have an expert investigate the smelter itself, the lawsuit was filed in federal court in Helena on March 16, 1910. By late 1910, government attorneys learned from forest pathologist G.G. Hedgcock that in addition to killing trees and vegetation, the smelter was stunting growth in trees within a 22-mile radius of Anaconda. In early December 1910, Kelley opened serious negotiations with a proposed settlement – compensation would be fixed on the value of standing timber killed since 1903, and the stumpage price would be based on less than one-half of what the government currently charged. Kelley said the company would pay the government a lump sum settlement of \$25,000 for past injuries and \$5,000 yearly for future injuries. The company also promised to continue investigating pollution control technologies. Johnson wanted Amalgamated to pay so large an annual payment that it would be forced to find a solution to the emission problem, and Attorney General George W. Wickersham considered the offer absurd.⁴¹

In a contract signed between the government and Amalgamated on April 13, 1911, the company agreed to use its best efforts at all times to prevent, minimize and eventually eliminate the emission of injurious fumes, particularly sulfur dioxide. A board of experts, later called the Anaconda Smoke Commission, was created to ascertain the company's compliance with the contract. Wickersham accepted the contract in lieu of a lump-sum settlement because he wanted to wait until the pollution was ended before taking up the question of damages, according to MacMillan. Both Wickersham and Johnson trusted that the Smoke Commission would be free from corruption and influence. Meanwhile a new technology appeared that offered hope – Cottrell electric precipitators, which used charged electrodes to remove particulates from flue gases. Johnson, however, studied the use of Cottrell precipitators in California and found them lacking. Other pollution control methods later appeared, including the Thiogen and Hall processes, which addressed sulfur emissions with a wet scrubber.⁴²

The Smoke Commission issued its report on these new technologies in December 1912. The federal government at that time withdrew from participating in the Smoke Commission proceeding for 10 years, although it held onto plans to seek compensatory damages once the emission problems were solved. Over time, the philosophy of the Smoke Commission changed from what was achievable to what was feasible, according to MacMillan. Abatement methods had to be cost efficient. In 1917, the Smoke

Commission came out with a plan for the Washoe smelter that called for a new 525-foot stack and a new flue system that included a large Cottrell precipitating unit at a total cost of \$1.6 million. Construction of the new flue system and stack began that year. In 1918, Kelley, as the Anaconda Company's vice president, wrote to the Smoke Commission explaining that labor shortages and the war effort had delayed efforts to control pollution, as agreed upon in the 1911 contract.⁴³

According to MacMillan, Kelley didn't mention that the copper company had made huge profits during World War I, that Montana's taxes were the most favorable for mining in the West, and that Anaconda was sinking millions in a copper mining venture in Chile. The Smoke Commission's next report came out in 1920, a 119-page document that apologized for Anaconda's lack of progress in abating emissions. The report concluded by calling for the Anaconda smelter to employ the best methods and equipment known to science, so long as they were also economically feasible. During the 10 years of the Smoke Commission's existence, sulfur dioxide emissions had increased by 70% or more as a result of increased production. In 1923, the company began negotiations with the government for land exchanges. The Anaconda Company demanded that the exchanges be accompanied with a promise by the government that the smelter be released from any claims for injuries by smoke in the past and into the future.⁴⁴

The Smoke Commission issued its last report in 1924, a 16-page review of the previous report with updated figures supplied by the Anaconda Company. According to the report, the Cottrell precipitators had recovered 81% of the arsenic and 93.5% of the copper in the smelter emissions. The significant increase in arsenic recovery was tied to an economic benefit – arsenic was sold in large quantities to Southern cotton farmers dealing with a boll weevil infestation. The Smoke Commission declared that arsenic emissions were less than one-third of what they were in 1916, and that the danger of injury to outside interests no longer existed. No recovery was attempted for sulfur dioxide, but the Anaconda Company had invested \$2.5 million in phosphate mines with the goal of removing sulfur dioxide and manufacturing fertilizer. According to MacMillan, the Smoke Commission declared the Washoe smelter air pollution problem to be ended. By 1924, most of the land within the smoke zone from the Bliss case was owned by the Anaconda Company, which held the "smoke rights" to most of the farmland in the Deer Lodge Valley. The federal forest land exchange process was approved through a Congressional bill passed on Feb. 28, 1925, and six land exchanges took place between 1928 and 1938. In 1933, the clerk of the federal district court in Butte wrote the final entry in the docket for the U.S. v. Anaconda Copper Mining Co. case: "Abandoned." As late as 1956, an Anaconda Company air pollution handbook declared that air pollution by the Washoe smelter was eliminated for all time in 1910 by the installation of the large Cottrell precipitators.⁴⁵

The state steps up

The history of the Washoe smelter cases proved that federal government was not much better equipped to take on the Anaconda Company than state or local governments. The evolution of effective air pollution regulations by the State of Montana took half a century, beginning with recognition of the state's right to protect workers. In the 1919 case *Shea v. North-Butte Mining Co.*, the Montana Supreme Court upheld the power of the Montana Legislature to enact a worker's compensation act to provide benefits to workers injured in industrial accidents as a way to replace common law remedies. Over time, companies recognized that worker's compensation law provided limited protection to industries from personal injury lawsuits. In 1959, the Montana Legislature enacted the Occupational Diseases Act to provide benefits to workers who were made ill over time by industrial conditions. By 1978, nearly every state in the U.S. had enacted some type of occupational diseases act, typically in response to the "heavy incidence of silicosis and asbestosis in certain industries, for which full coverage under worker's compensation would have created a difficult burden," a 1989 Montana Supreme Court opinion stated. The Occupational Diseases Act was passed by the Montana Legislature in 1959 as "incidents of devastating diseases in the work place also increased," Montana Supreme Court Justice Terry Trieweiler noted in 2003.⁴⁶

In January 1970, the United Steelworkers of America Local 6002 began to investigate and request a detailed study of health conditions at the 400-acre Anaconda copper and zinc smelter and refinery in Great Falls and Black Eagle, where 2,000 employees worked around fumes. Union representatives claimed workers suffered from a high rate of respiratory diseases. A month later, the U.S. Public Health Service, in conjunction with the state health department, began a review of occupational health hazards at the plants. After a tour of the plants, the agencies said they were understaffed and couldn't analyze or recommend solutions. Anaconda Company personnel were questioned in 1971 during a Montana Senate hearing on a proposed Occupational Health Act seeking to limit airborne concentrates in plants. At the hearing, J.P. Mooney, a Steelworker representative in Great Falls, said conditions at the copper refineries in 1971 were the same as 30 years earlier. Health problems at the Great Falls plants existed from the time they first began operating. Dangers included gases, fumes and particulates from asbestos fibers, zinc, cadmium, lead, arsenic, copper and other chemicals.⁴⁷

Meanwhile, state regulations to control industrial air pollution rested on the right of citizens and governments to file a lawsuit against the offending company. According to the 1947 Revised Codes for the State of Montana, "it is lawful for a county or incorporated city or town where injurious or unhealthy smoke or fumes exist, upon petition signed by at least 100 of the resident taxpayers of the county, city or town, to

make contracts with such persons or corporations as will in the opinion of the board of county commissioners or city council, best accomplish the purpose for the abatement thereof and to issue and dispose bonds for that purpose subject to the limitations and conditions hereafter provided.” Critics of this provision claimed that the law was difficult to interpret and that specific issues could not be defined by it. The laws of the state also provided a means for citizens to seek relief by declaring air pollution a public nuisance, but legal experts claimed that provision was ineffective. Under state law on the books by 1964, no state or local agency had the legal authority to prevent the installation of equipment which released smoke or fumes, nor to regulate existing equipment.⁴⁸

In the mid-1950s, scientists from the University of Montana studied fluoride levels in vegetation near the Victor Chemical Company plant near Butte, where numerous lawsuits had been filed over damaged livestock. In 1956, the Montana Department of Health’s Industrial Hygiene Division used high-volume air samplers to collect random samples around the state. The investigators found “astonishing concentrations of pollutants” in different areas, according to a 1972 account by Benjamin F. Wake, director of Montana’s Air Pollution Control Division, including benzene-related chemicals in Missoula, arsenic in Anaconda and lead in East Helena. The state received a \$10,000 grant from the U.S. Public Health Service’s National Cancer Institute in 1961 for year-long sampling at seven Montana cities, including Anaconda, Butte, Helena, Great Falls, Missoula, Libby and Billings.⁴⁹ Wake received his bachelor’s in civil engineering from the University of Colorado in Boulder in 1950 and a master’s in public health from the University of Pittsburgh in 1955. He served on the Water Pollution Control Board in Denver, Colo., before coming to Montana, where he served as the director of the Montana Department of Health’s Air Pollution Control Division.⁵⁰

Generally, the year-long sampling found dangerous pollutants but in lower levels than would be found in large urban areas in the U.S. “The study seems to have demonstrated that dangerous air pollution levels were not as unlikely a possibility in Montana as the small population might suggest,” Wake said. A year-long sampling in the Flathead Valley in 1963 to 1964 found substantial air pollution in Columbia Falls, especially fluoride. Studies were also conducted in Helena and East Helena in 1965 to 1968, Deer Lodge Valley in 1965 to 1966, and Laurel and Billings in 1966 to 1967. A movement toward air pollution regulations by the Montana Legislature followed reports of a large number of deaths associated with lung diseases in Deer Lodge, Powell and Silver Bow counties, Wake said. Numerous bills were introduced in the Legislature in the early 1960s without success, and a 1965 bill was vetoed by the governor before a Clean Air Act was passed in 1967. After the 1967 bill was passed, the state health department was authorized to set ambient air quality standards for various Montana communities. In addition, any new industrial facility, or any older facility that was being replaced or moved to a new

location, was required to include the most advanced air pollution control equipment, Wake said. By 1971, about \$59 million had been spent by industry in Montana to comply with the new law.⁵¹

It wasn't just smoke from copper or aluminum smelters that led to action in the 1960s – many of Montana's western residents were weary of smoke and dust emitted by the timber industry. But public support for air pollution regulations took time to grow. In 1963, proposed air pollution control regulations died in the Montana Legislature. In 1965, a second air pollution control act was debated in the Legislature and was passed only to be vetoed by Republican Gov. Tim Babcock.⁵² Since most of the pollution existed in cities or towns in western Montana, the three smog-control bills that died in the Legislature in 1963 drew little support from legislators in more rural eastern Montana. As a result of this defeat, Gov. Babcock appointed a seven-member Air Pollution Investigation Committee to study the "nature, character and extent of air pollution in Montana." The committee's report was to be presented to the 1965 Legislature in an effort called "Keep Montana as the Big Sky Country."⁵³ In late March 1963, a Montana Board of Health study of air pollution in the state was released with figures on total suspended particulates. Missoula had the highest at 158 followed by Libby at 128, Butte at 125, Billings at 99, Anaconda at 89, Helena at 72 and Great Falls at 58. Libby was high for benzene levels, Anaconda was the highest for arsenic and lead, and Butte was the highest for fluorides. The principal factors creating an air pollution problem in Libby were the lack of air movement in the valley combined with burning of waste wood products along with oil and gas combustion.⁵⁴

On May 14, 1964, a committee was formed among citizens, businessmen and public officials in Missoula to organize an effort to force an Air Pollution Control Act through the 1965 Montana Legislature. Kenneth J. Lampert, the Missoula city-county health officer, was named chairman of the committee. A representative of the Western Montana Medical Association said the association supported the effort to control air pollution. A representative from the timber industry told the group that the industry was not in a position to take a stance for or against the group's efforts. A professor from the University of Montana law school explained revisions in the proposed legislation. The proposed bill would create a seven-member state air pollution council and was largely based on an air pollution control law in California.⁵⁵ On Nov. 6, 1964, Benjamin Wake, at the time an industrial hygiene engineer working for the Montana Department of Public Health, told people assembled at an air pollution control meeting in Missoula that he believed air pollution in the state had been reduced by 30% in the past few years. He added that "a great deal more needs to be done." At the same meeting, Lenert Johanson, from the University of Washington in Seattle, stated that air pollution problems were better addressed with technical solutions than by new legislation. He

called for more cooperation between industries within a local geographical area.⁵⁶ In 1965, Gov. Babcock vetoed House Bill 56, the air pollution control bill.⁵⁷

Science with a mission

To succeed in getting effective government air pollution regulations and to see that they were enforced required a special skill set – a professional technical education, a sense of moral outrage and a dedicated confidence that could outlast corporate legal maneuvering. It was during the 1960s that such a person appeared – Clancy Gordon. Lost to popular history, Gordon was perhaps the most colorful and successful environmentalist in Montana history. One of the founders of the University of Montana’s Environmental Studies Program, Gordon was once photographed resembling Moses descending from Mount Sinai and holding a faux-stone tablet bearing the “Ten Environmental Commandments.” A newspaper clipping of the photograph found in the basement of the Natural Science and Botany Building was framed and hung on the wall in March 2003 by the Environmental Studies Program’s director, Tom Roy. “There’s certainly a persona that has grown up here,” Roy said about Gordon. “You wouldn’t see anybody at Yale going out and dressing up in a cleric’s robe and reading the ‘Ten Commandments of the Environment.’”⁵⁸ The Clancy Gordon Environmental Science Laboratory that he established in the building and where he conducted so much important research still remains, but it is now used by the university’s botany and biology departments.

Clarence “Clancy” Gordon was born in Seattle in 1928. He grew up in a poor family through the Great Depression and World War II and was suspended or expelled from public schools because he preferred to be out hunting or fishing or enjoying the outdoors. Nevertheless, he graduated from high school at 17 and spent the next four years working as a commercial fisherman in Alaska. He was drafted during the Korean War and returned to commercial fishing after leaving the Army. Then, deciding he didn’t want to remain a fisherman, he enrolled at the University of Washington and graduated in 1956 with a bachelor’s degree focused on mycology, the study of fungus. Gordon went on to graduate school at Washington State University in Pullman, Wash., where he completed a Ph.D. in plant pathology in 1960.⁵⁹ As a graduate student during the summers of 1957 and 1958, Gordon traveled to Spokane to study the impacts of fluoride pollution from Kaiser’s Mead aluminum smelter on trees.⁶⁰ Gordon joined the faculty at the University of Montana in Missoula in 1960 as a professor in the Botany Department. He helped establish the graduate environmental sciences program there in 1970, serving as the program’s director from 1970 to 1975.⁶¹ Gordon was a faculty member at the University of Montana from 1960 to 1981 and was included in the top 50 alumni list published by the university’s alumni magazine *Montanan*.⁶²

Gordon was a prolific author and researcher and a respected teacher who communicated his message of environmental activism through informal and unconventional methods. On April 6, 1970, about 70 people climbed to the “M” on Mount Sentinel above the University of Montana campus to see Gordon, dressed in a flowing black robe, read the Ten Environmental Commandments as part of the Friends of Earth Week activities: “Thou shall not have any earth (planet) beyond this one – so love it and treat it with respect; Thou shall not make a graven image to worship – such as a computer; Thou shall not take the name of any polluting industrialist in vain – except on odd and even numbered days of the week; Remember Earth Day to keep it holy; Thou shall honor thy mother earth and father sun by having only two children and living in harmony and peace; Thou shall not kill those species of animals in the ocean and on the land which have reduced populations (especially the whales); Thou shall not commit adulterated acts upon the earth or foods we consume; Thou shall not steal the rights of the female species to be equal in all ways to the male species; Thou shall not be a false witness for legislators, such as Montana Sens. (George) Roskie (R-Great Falls) and (Jack) Galt (R-Martinsdale), who introduced legislation to weaken or destroy present environmental laws; Thou shall not covet thy neighbor’s Cadillac, nuclear power plants, nuclear bombs, missiles and non-returnable aluminum and glass containers.”⁶³

Gordon was considered an expert on the effects of fluoride emissions and other air pollutants on plants, and was an important witness in many legal cases and adversary hearings brought against major polluters in the 1960s and 1970s. His work took him across the U.S. and to Europe. He faced off with numerous large corporations, including the Anaconda Company, Montana Power Co., Cominco, ASARCO and Reynolds Metals Co.⁶⁴ In 1963, Gordon established the University of Montana’s Environmental Science Laboratory in the Natural Science and Botany Building. It’s there that he did his seminal work on fluoride pollution and its effects on plants and animals. His work helped shape air pollution policy in Montana and the U.S.⁶⁵ In the early 1960s, Gordon and other scientists at the university challenged the widespread use of DDT by the Forest Service to control spruce budworm on the National Forests. By 1965, according to allegations by Gordon, his research grants were terminated in retaliation by the Forest Service.⁶⁶ In the late 1960s, Gordon took one of his classes to Douglas Creek, near Hall, Mont., where a phosphate concentrator had operated until 1968. The class collected about 15,000 to 16,000 insects from the impacted area, including aquatic insects, and from 100 to 200 trout over one or two weeks. The work was supported with a federal grant.⁶⁷

A decade after the Forest Service allegedly terminated his research grants, two studies published in the Journal of the International Society for Fluoride Research in 1975 carried Gordon’s byline, including “Industrial fluorosis in wild mule deer and white-tailed deer from Western Montana.”⁶⁸ On March 24, 1978, the Spokane Spokesman-Review

reported on Gordon's opposition to a proposal to fluoridate the city water supply in Missoula. The proposal called for adding about 60 tons of fluoride to the city's water supply each year, but Gordon said the city's 13,000 children needed only 10.5 pounds per year. He supported the use of fluoride for dental purposes, but he expressed concerns about excess fluoride getting into gardens, streams, and plant and animal life within the water system's boundaries. Gordon said the excess fluoride could build up in the Clark Fork River and harm aquatic life.⁶⁹ Gordon died after a two-year battle with cancer on July 12, 1981, at age 53. A heavy smoker, he was still a faculty member at the University of Montana. Among his extensive papers at the Mansfield Library are documents involving the Kaiser Aluminum Corp., Reynolds Metals Co. smelters in the U.S. and Germany, Harvey Aluminum, Amax Aluminum, Cornwall Island on the St. Lawrence Seaway, Rocky Mountain Phosphate in Garrison, Mont., Eastalco Aluminum Co., Intalco Aluminum Co., Glacier National Park, the Anaconda Aluminum Co. plant in Columbia Falls, the Cominco phosphate mine in Montana and the Ormet aluminum smelter in Ohio.⁷⁰

Another colorful environmentalist at the University of Montana at that time was Elizabeth Hannum. After several marriages, her papers at the Mansfield Library are catalogued under the name Elizabeth Reitell Smith. She was born in Elmira, N.Y., on Sept. 11, 1920. After graduating from Bennington College in Vermont in 1941 with a major in theater design and a minor in dance and drama literature, Hannum worked on designing costumes for a dance group, spent three years with the Army Air Corps in World War II, studied art in France and then met the famous Welsh poet Dylan Thomas. She produced his famous play "Under Milkwood" and they were close friends until he died in 1953. Hannum was playwright Arthur Miller's assistant in 1962 when she came to Montana for a Montana Wilderness Society-sponsored horse-packing trip into the Bob Marshall Wilderness. She soon developed a passion for Montana wilderness areas and became the publications director for the University of Montana's School of Forestry. After five years in that position, she met and married her fourth husband, Eldon Smith, an environmentalist and wildlife biologist at Montana State University. The two traveled the Western states for the next 13 years speaking about the environment. During that time, she was the director of the Montana Wilderness Association. She and her husband were awarded the Outstanding Environmental Achievement award in 1972. Hannum died in 2001.⁷¹

Showdown at Garrison

Hannum and Gordon worked together in the 1960s to promote air pollution control in Montana, beginning with a hands-on effort to shut down a phosphate processing plant in Garrison, about 38 miles north of Butte along Interstate 90. The Rocky Mountain

Phosphate Co. began operating in the Butte area in 1959 but left its rented site and moved to Garrison after repeated litigation, court-ordered closures and public complaints about air pollution.⁷² On May 2, 1963, the Silver Bow County District Court ordered the company to permanently close its kiln in Butte because of air pollution close to the ground. The kiln was located only one block away from the Webster-Garfield School. On May 24, the Montana Supreme Court modified the injunction so the kiln could be operated when the school was not in session. A hearing was scheduled for May 27 to hear arguments about the modified injunction, but the company decided to move.⁷³ By August, the company had acquired 15 acres of land near a Northern Pacific Railway track in Garrison from a rancher named Edward Mollenberg.⁷⁴ On Aug. 2, construction began on a plant to de-fluorinate phosphate ore used for manufacturing an animal feed supplement.⁷⁵

Air pollution complaints by locals began soon after the Rocky Mountain Phosphate plant began operating in September 1963. Garrison residents complained about dust, fumes, burning eyes, asthmatic conditions, damaged automobile finishes, cows drying up and fumes spreading to other areas.⁷⁶ In the first year of the plant's operation, classes at the nearby school were interrupted 35 times. Nearby residents complained of "strep" throat, burning eyes and asthmatic symptoms, which they believed was caused by pollution from the plant. Soon cattle had mottled teeth and stiff legs that caused the cows to graze on their knees. Samples of vegetation near the plant contained fluoride concentrations several thousand times usual levels.⁷⁷ Soon after it started operating in Garrison, the plant was ordered closed for 34 days. The plant was ordered closed for seven more days in 1965 after nearby residents complained.⁷⁸ Ben Merson reported on the Garrison case in "The Town That Refused To Die" in Good Housekeeping magazine in January 1969. The first day of school in 1963, a "black pall" descended over the area, choking school children about 300 yards away. Residents gathered immediately to discuss what to do, but they discovered that the county health officer was on the phosphate company's board of directors and the county attorney was the company's chief counsel. There were no state laws against air pollution at the time, but there was a law against creating a public nuisance. The residents quickly pledged to raise \$12,000 to sue the company.⁷⁹

In March 1964, as the injunction and nuisance lawsuits came up for a hearing, the state health department reported that sulfur and hydrogen fluoride emissions from the Rocky Mountain Phosphate stacks were from 2,000 to 5,000 times beyond levels considered safe for humans. The plant's sulfur fumes were traumatic to eyes, lungs and skin, according to John S. Anderson, director of the state health department, but they could also cause death in people with emphysema or bronchitis. Absent any air pollution regulations, however, the health department could not do much unless Gov. Babcock

acted, but appeals to the governor by local residents led nowhere, according to Merson. A judge in Deer Lodge reserved a decision but allowed Lucille Davis, the school teacher in Garrison, the authority to demand the plant temporarily shut down when conditions were intolerable. She later said the processing plant rarely heeded her demands, and the pollution continued.⁸⁰

The Gallatin County District Court ordered the phosphate plant closed for four days in March 1964 as the company installed new air pollution control equipment. In a pattern that continued for another decade, the plant was ordered closed for 34 days in summer 1964 and reopened again with promises of new pollution control equipment. In fall 1964, Clancy Gordon and University of Montana botany professor Richard Solberg visited Garrison and found damage caused by hydrogen fluoride gas. They reported their findings to Benjamin Wake at the Montana Board of Health.⁸¹ Gordon credited Solberg in a 1971 court deposition for developing the methodology that established the standard he used for conducting histological studies. Solberg developed the standard while studying the effect of phytotoxic gases on plant cells while working on his master's degree at Washington State University. Solberg later became the Dean of the College of Arts and Sciences at the University of Montana.⁸²

In December 1964, the state health department charged Rocky Mountain Phosphate with contempt of court, but the new judge hearing the case threw out both the contempt charge and the charge that the plant was a health menace. The company then changed its de-fluorination process, stepping up output while doubling the amount of fluoride gases emitted by the plant. Health conditions worsened, with people who were never ill developing symptoms similar to emphysema, bronchial pneumonia and heart disease, according to Merson. Some children reportedly were born with asthma. Outsiders shunned Garrison, avoiding its restaurants and fishing in the nearby Little Blackfoot River. As the state legislature began debating new air pollution control laws, Gov. Babcock stepped up his opposition to the regulations, claiming pollution control was expensive and would harm industry without benefiting the public. His hand-picked air pollution committee reported there was no serious air pollution in Montana – merely some smoke nuisance in the mountain valleys. Residents could appeal for relief under existing laws, the committee said.⁸³

In the winter of 1964-1965, University of Montana chemistry professor Wayne VanMeter traveled to Garrison to sample for fluoride in snow and grasses at the request of Missoula attorney Russell E. Smith, who was representing local ranchers in a lawsuit against the company. Gordon revisited Garrison with Washington State University researcher Donald Adams the next summer at the request of Judge Jack L. Green. In September 1965, Gordon and Solberg joined University of Montana forestry professors

W. Leslie Pengelly and George Weisel for a trip to Garrison. Afterwards, Gordon sent a request to the U.S. Interior Department regarding their findings. In October 1965, Interior Secretary Stewart Udall replied, promising to support their efforts to prevent fluoride pollution.⁸⁴ But that summer, Rocky Mountain Phosphate installed a second kiln, generating even more air pollution in the area. Chemical reactions from the fumes ate the brass off doorknobs, ruined aluminum siding and scarred glass on windows, making them opaque, according to Merson. Even pots and pans in cupboards reportedly were damaged. As the pollution spread beyond the community of Garrison, it killed vegetation on hillsides. Ed Mollenberg, who had sold the 54 acres to the company for the plant site, lost his \$20,000 per year dairy farm, as the milk became calcified by the fluoride-laden smoke. William F. Harris, a veterinarian, concluded that the diseased cattle suffered from fluorine toxicosis. With proof in hand, Mollenberg and six other ranchers filed a \$450,000 damage suit against the company, charging destruction of timber and cattle and seeking a permanent injunction.⁸⁵

On Aug. 24, 1965, Bryce L. Rhodes, president of Rocky Mountain Phosphates Inc., wrote to one of the company's stockholders to update him on the company's finances and the operation of the new plant built at Garrison. Rhodes said the site was chosen for its proximity to a natural phosphate deposit and the Northern Pacific Railway tracks. The new plant cost about \$538,000 to build, of which about \$415,000 was raised by company earnings. Rhodes said the new plant "showed good improvement over Butte as to the control of smoke and other effluents. However, some of the residents living in the immediate vicinity of the plant claimed that the plant was a public nuisance on the grounds that our smoke generally annoyed or irritated them. The state Board of Health became involved and we feel that it grossly exaggerated the effect of our smoke on local residents." Rhodes said the \$750,000 claimed by the plaintiffs in the two lawsuits to abate the company's pollution "are far in excess of any realistic court awards."⁸⁶

Rhodes also told the stockholder about the benefits of his company to the local economy. "It is worthwhile remembering that the Deerlodge-Garrison-Drummond area is no longer basically a cattle or sheep area," he said. "The largest income to the area is from phosphate mining and processing, which produces an annual income to the area of over \$6,000,000 per year." He noted that other types of metals mining added to that figure, and that 20,000 head of cattle would only earn about \$3,000,000. "The excessive efforts of some of our misinformed neighbors to kill our company represents a direct attack and goal to kill and discourage any more industry in this area," Rhodes said. "Our defense is scientific fact and proof that both can develop side by side to the greatest good for the present and future of these communities." Rhodes noted that the plant had switched away from the sulfuric acid process for removing fluoride from phosphate

ore to a process using modified soda ash in an effort to reduce emissions, but the new process reduced output and it was becoming difficult to meet demand.⁸⁷

The Garrison ranchers went to court in Bozeman in March 1966 seeking \$414,000. They won a \$123,000 judgment in a highly publicized trial in which the plaintiffs were able to show that fluoride had injured cattle and vegetation, but District Court Judge W.W. Lessley declined to grant an injunction to shut down the plant. "There are no grounds at present that would justify the court to issue an injunction terminating the defendant's operation at Garrison," Lessley said in his May 1966 ruling. According to a report on the case that Clancy Gordon and Elizabeth Hannum wrote for the newspapers, Lessley said improvements at the plant had stopped the fluoride pollution, but he had based his opinion on evidence provided by Rocky Mountain Phosphate. The company had made some of the cited improvements only days before the trial began, they noted.⁸⁸ The company's president, Bryce L. Rhodes, admitted air pollution from his plant had destroyed ranch property, but the jury only awarded \$10,000 in punitive damages. Soon after the decision, Gov. Babcock vetoed a bipartisan air pollution control bill and it was discovered that the governor's trucking firm did business with Rocky Mountain Phosphate. Lee Metcalf used this information in his Democratic campaign against Babcock for Montana's U.S. senate seat, and Babcock was overwhelmingly defeated.⁸⁹

Gordon had been collecting diseased conifer samples from around the world since 1960, accumulating 3,000 photos and 25,000 microscopic slides, "possibly the largest such slide collection in the world," he said in his deposition in the Rocky Mountain Phosphate case. "In all this experience, fluoride damage is unique in its manifestations," he said.⁹⁰ Russell Smith asked Gordon in November 1965 to serve as an expert witness in the ranchers' lawsuit, and Gordon collected samples throughout the Garrison area from November 1965 through March 1966.⁹¹ In the weeks leading up to the March 22-23, 1966 trial, "Rusty" Smith prepared his expert witnesses. A collection of notes with the title "End of questioning" in the Elizabeth Reitell Smith papers provide an idea of how Gordon was prepared: "Question: If the Garrison plant continues to put out fluorine in the same amounts as currently, what is your opinion to the effect? Answer: (Belt this one! Mention devastation, wasteland, destruction of environment such as Mead; Trail, B.C.; Wallace and Kellogg, Idaho.) Question: Why? Answer: (Rusty suggests as follows): Ultimately, all the conifers will die. Once the trees are gone, the biological equilibrium is destroyed. The smaller plants and the animals depend on the conifers for survival. Without the trees, these smaller organisms will also disappear. This is what we see in devastated areas. Such areas are, in truth, biological deserts. Question: How long would it be before this area reforested itself? Answer: Decades, centuries or never. (Explain ecological interactions.)"⁹²

Hannum attended the trial in Bozeman and took shorthand notes for use by various conservation groups and individuals. On March 22, she wrote down personal comments on 4-by-8 inch note cards with a theatrical eye. “Ethical question: Does an individual have any more right to poison the land than to poison other human beings?” she began. She then described the faces of three individuals in the case – defense attorneys Wade Dahood and Malcolm MacCalman and company owner Bryce Rhodes: “The hooded eyes on all three – reptilian, old symbol of evil.”⁹³ She also described the people in the court room: “Taut little ranchers in too-tight Western jackets,” she wrote. “Plaids, stripes, big hats. Frosty, snow-booted women. All the Western faces.” She noted there were eight women and four men on the jury.⁹⁴

G. Thomas Purvence of Provo, Utah, was the defendant’s star witness. A veterinarian with experience dealing with fluoride pollution emitted by the U.S. Steel Corporation’s Geneva steel plant in Utah, Purvence called fluorosis “a loose term” and claimed fluoride emissions were not necessarily damaging to cattle – there was no effect on the animal’s flesh, its reproductive capability or on the quantity or quality of milk it produced, he said. Extensively damaged teeth caused by fluoride would not stop a cow from grazing, he said. Two other witnesses for the defense, Louis Olson, the retired director of ASARCO’s Agricultural Research Department in Salt Lake City, and Donald F. Adams, from Washington State University’s Air Pollution Section, noted that trees in the Garrison area where the phosphate plant was located were damaged in 1963 and 1964, but they had seen little damage in 1965. They agreed that fluoride emitted by the plant had caused the initial damage, but they didn’t expect any more damage under the current conditions. Rhodes took the stand and acknowledged that his company “took chances in operating without cleaning equipment and on later occasions when the equipment broke down,” but that would no longer happen, he said. Rhodes also claimed that with a new process control system in use since March 1965, the only emissions would be steam and carbon dioxide.⁹⁵

The phosphate plant continued to operate. In September 1966, Garrison residents brought dead and damaged plants to Gordon’s laboratory at the University of Montana and reported that they experienced extreme respiratory irritation. Wake told Gordon that three monitoring stations in Garrison had measured fluoride levels in grasses in August at 52 ppm, 235 ppm and 412 ppm. In October, someone dynamited the stack at the Rocky Mountain Phosphate plant. The perpetrators were never identified, and there was no extensive damage.⁹⁶

On Oct. 10, Gordon and Hannum wrote a report on the Garrison situation for newspapers around Montana. They noted that six months after the trial and four months after the judge refused to shut down the plant, livestock continued to show

symptoms of fluorosis, such as damaged bones, the surrounding land had withered vegetation, and a gray pall hung over the community with a choking smog at night. Gordon and Hannum noted that it would cost about \$33,000 per year to monitor emissions from the plant's stack, but the Montana Board of Health lacked the personnel and money to do that work. They pointed out that the Powell County Health Officer, Gordon Anderson, sat on the Rocky Mountain Phosphate board of directors. They also noted a resistance to change by some government officials, including Missoula Mayor Howard R. Dix, who had implied that anyone who openly battled air pollution was a bad citizen. Another expensive lawsuit might be necessary to force the company to shut the plant down, Gordon and Hannum said, but the ranchers had not yet received their \$123,000 settlement, and Rocky Mountain Phosphate had appealed the Bozeman judgment to the Montana Supreme Court. Another solution was to wait for stronger laws, including a Montana Air Pollution Act.⁹⁷

Gordon and Hannum's report was published in the Oct. 30, 1966, Missoulian on the opinion page. Right next to it was an editorial calling attention to the fluoride pollution in Garrison. "The air pollution at Garrison is deadly serious – more serious than any air pollution condition in Montana," the editorial said. The Missoulian called for the Montana Legislature to pass a bill in its next session "that will effectively control air pollution and which does not become the object of partisan bickering. People need to breathe clean air too badly to see their hopes of doing so demolished by political antics." The editorial added that evidence of a promising attitude by legislators toward air pollution regulation was seen in the past election.⁹⁸ In November, Cow Belles, a grassroots organization of wives and daughters of Garrison ranchers, distributed 1,000 copies of the Gordon and Hannum article. In March 1967, the Missoulian granted a request by the North Carolina Wildlife Federation to reprint the Gordon and Hannum article in their magazine. Soon after, the Missoulian, Gordon and Hannum received a certified letter from Rhodes demanding a retraction to their Oct. 30 article. The authors refused to retract their statements, and no further evidence of a libel lawsuit was seen.⁹⁹

On Dec. 17, 1966, during a public hearing about the fluoride pollution held in the Garrison grade school, Gordon testified about damage to vegetation and cattle caused by hydrogen fluoride emissions from the phosphate plant. In January 1967, state Sens. Elmer Flynn of Missoula and John L. McGowan of Anaconda submitted a joint resolution requesting federal intervention to address the fluoride pollution in Garrison. The resolution passed in both houses, and U.S. Public Health Service Division Chief S. Smith Griswold visited Garrison as a result. That action may have pushed Gov. Babcock and the Powell County Commissioners into formally requesting a federal investigation of the matter in March. That month, CBS broadcast journalist Walter Conkrite hosted a half-

hour program on the air pollution in Garrison, and an article on Garrison's air pollution appeared in the Los Angeles Times West magazine in April. In May, Garrison ranchers and local dentists agreed to save baby teeth of local children for use in an investigation, and Wake reported finding 1,750 ppm fluoride in grasses in the Garrison area.¹⁰⁰ In June, the first federal air pollution abatement conference in history that focused on a single state met in Garrison, where members looked over the fluoride emission problem. Representatives from the National Center for Air Pollution Control, the Montana Board of Health and the Montana Legislature met earlier with local ranchers at the request of Gov. Babcock to hear reports of injuries to people, livestock, vegetation and other property.¹⁰¹

On Sept. 11, 1967, the Rocky Mountain Phosphate plant shut down operations after four years of litigation only to reopen temporarily under strict regulations. The closure came under an agreement between the Montana Board of Health and plant officials that required new air pollution control equipment to be installed and approved by the Montana Health Department and Aaron Teller, the dean of engineering at the Cooper Union college in New York City. Teller was a recognized authority in pollution abatement equipment. Temporary repairs to the plant's air pollution control equipment prior to the agreement had not been approved by Teller or Benjamin Wake, Montana's air pollution control director.¹⁰² And so began another cycle of closures followed by claims of new pollution control equipment and another restart that continued to 1976. But in the meantime, real progress toward establishing state air pollution control regulations was taking place in Helena. The role of the Garrison pollution case likely played a role in the outcome in the state capital, but so did smoke and dust from the state's timber mills.

Pushing through a clean air act

On Nov. 15, 1966, nine of Missoula County's delegates to the Montana Legislature met with the public for a two-hour briefing on air pollution in the Missoula Valley. Longtime clean air advocate and University of Montana law professor Gardner Cromwell pleaded forcefully and unequivocally for a state pollution control law which "sets standards, has penalties and has an end," referring to some kind of time-limited due process. He argued that the bill drafted by the Governor's Committee on Air Pollution did not set standards, provided insufficient penalties and allowed for interminable litigation.¹⁰³ Four air pollution control bills were introduced to the Legislature in January 1967. The Missoula Chamber of Commerce went on record in support of House Bill 8, which was introduced by representatives from Missoula. This bill had stronger language and more bipartisan support than a competing bill, House Bill 30, which had been introduced by the Montana Board of Health's Air Pollution Council. A joint resolution called for hearings to be held in Columbia Falls, Butte and Drummond to take input about local air

pollution, specifically plants which emitted fluorides.¹⁰⁴ Then on Jan. 30, President Lyndon Johnson called for nationwide air quality standards. His words suggested to some that the federal government, through the Department of Health, Education and Welfare, would soon be setting air pollution control standards nationwide.¹⁰⁵

By February 1967, the two air pollution control bills continued to compete for passage in the Montana Legislature. House Bill 8 was passed in the House Public Health, Welfare and Safety Committee with only minor changes. The bill allowed a fine of up to \$1,000 to be imposed by a judge for violators, and air pollution control machinery was put into a low tax category to help industry. The bill also called for creating an advisory council, taken from the competing House Bill 30, which would include a meteorologist, an urban planner and an industrial engineer or chemist. Local control was provided by a mechanism in which 15% of the voters in a county or municipality could petition the government to take action against a polluter. The Montana Board of Health was put in charge of air pollution control rather than a separate commission. Mel Ruder, publisher of the Hungry Horse News in Columbia Falls, commented on all these changes in a Feb. 3, 1967, editorial. "The whole nation, not just Los Angeles, is becoming much aware of the problem. Earlier this week President Johnson asked Congress for legislation to wage a massive attack on air pollution. He said the battle would be lost in ten years if more isn't done now," Ruder said. "He called for the federal government to establish pollution controls where local and state governments fail to act." Ruder noted that the Montana Legislature was looking at a "sensible and somewhat adequate" pollution control bill but that the Flathead Valley "would have a lot fewer jobs if there wasn't smoke." The editorial concluded by calling for industries and the public to make a better effort in controlling air pollution.¹⁰⁶

On Feb. 28, 1967, Montana's first air pollution control bill was approved by the Montana House and was expected to pass both the Senate and the Governor's Office. House Bill 8 was introduced by a vocal delegation from Missoula County. A sticking point had been a provision by the Senate that would have required the Montana Board of Health to set statewide standards on the amount of pollutants any industrial site could emit in a given time. The compromise bill only required standards to be set by the board in specific areas where air pollution was significant.¹⁰⁷ On March 2, the bill was passed by both houses, bringing smiles of relief to the 11-member Missoula County delegation which had fought hard to see it pass. Consensus was that it was now up to the Montana Board of Health to set up an effective air pollution control program. One of the first jobs for the board would be to appoint a director and to set statewide air quality standards within 90 days.¹⁰⁸

John Anderson, the Board of Health's executive officer, welcomed the responsibility for controlling air pollution in the state and explained that air quality standards would evolve over time and reflect local ambient conditions. The board would have the authority to issue and refuse to issue permits, and it would have veto power over any equipment which emitted air pollutants. The permit system also gave the board leverage over new industries coming into the state. Fines for violations could run as high as \$1,000 per day, but such actions were subject to review by a district court. Local areas were allowed to set up their own air pollution control programs if 15% of qualified voters petitioned for such a program, if the state board approved the local program, and if the local standards exceeded the state's standards. The bill also provided tax breaks to industries investing in pollution control equipment.¹⁰⁹

Gov. Babcock signed the Montana Clean Air Act into law on March 3, 1967. Air quality standards for sulfur dioxide, suspended sulfate, reactive sulfur, sulfuric acid mist, hydrogen sulfide, total suspended particulates, fluorides in the air, fluoride in forage and gaseous fluoride were adopted at the time without change. These were ambient standards – emission standards for specific industrial plants would be adopted later. There had been opposition to the act in prior years, but according to Edward T. Dussault, President Pro Tem of the Montana Senate during the 1967 session, "for some unknown reason" the act passed by 99-1 in the House and unanimously in the Senate.¹¹⁰ The Missoulian published an editorial congratulating the Legislature the same day. "The bill is not perfect, but it is a reasonably decent piece of basic legislation, probably the best that could be obtained at this time." Gardner Cromwell was credited with being the main author of the bill's original version, drawing from local councils, the state government and the U.S. Public Health Service.¹¹¹ The Montana Clean Air Act went into effect in May. Authority for enforcement was given to a large, mixed, politically-appointed committee with no regularly scheduled sessions. Policing was given to a powerless director under the Montana Board of Health. Air quality standards adopted with the act were much less specific or stringent than air pollution standards adopted by California in 1962. No standards existed at all for certain pollutants in Montana, such as nitrogen dioxide and carbon monoxide.¹¹²

The Montana Board of Health went right to work on firming up the state's air quality standards, beginning with a hearing scheduled for May 4 – the day after the governor signed the Montana Clean Air Act into law. In preparation for the hearing, Elizabeth Hannum wrote to Ted Wirth, a member of the Governor's Advisory Council, on April 30 to provide him with technical information. Hannum noted that the Board of Health's suggested level for fluoride in forage was too high, and under no circumstances should the level be above 20 ppm. She cited a University of Tennessee Agricultural Experiment Station publication from November 1954 titled "Fluorosis in cattle and sheep," which

linked fluorosis evident in cattle teeth and other extremely serious conditions with fluoride levels in forage of 27 ppm and higher. Hannum also noted that Barry Nolan, the manager of the Humble Oil Co. refinery in Billings and also a member of the Governor's Advisory Council, wanted to raise the standard for hydrogen fluoride in the air from 1 ppb to 3 ppb. Hannum recommended that 1 ppb was "very high" and the standard should not be tripled but reduced even further.¹¹³

Hannum, Gordon and Pengelly traveled to Polson to speak to the Polson Outdoors Inc. group about air pollution in Montana ahead of the upcoming Montana Board of Health hearing. They cited two main pollutants in the state – sulfur dioxide and fluoride. Gordon noted that cattle that lived within one mile of the Anaconda Aluminum Co. smelter in Columbia Falls would be expected to exhibit the same symptoms as cattle near the phosphate plant in Garrison.¹¹⁴ Wirth told the newspapers following the May 4 Montana Board of Health hearing that he had clashed with Anaconda chemist W.L. Warren. "He tried to snow us laymen with his statistics and technical information," Wirth said, adding that the meeting was a "standoff." Wirth said he believed effective pollution control measures existed. "To say it can't be done or that Montana has no problem is just plain foolish," he said.¹¹⁵

On May 24, 1967, Hannum presented a talk about sulfur dioxide and hydrogen fluoride pollution to the American Association of University Professors in Missoula. With the state's Clean Air Act signed into law, the process for establishing air quality standards included the Governor's Advisory Council for recommendations and the Montana Board of Health to set standards. The council was appointed in March 1967. Hannum noted that the government was providing "no published information" on the process – a public hearing on air quality standards was scheduled to take place on May 26, but there had been no public notice, she said. Overall, Hannum believed the presented air quality standards were "essentially good" but more could be done. "In almost all cases, they are conservative, reasonable, well-considered criteria for allowable levels of air contaminants," she said. "In certain cases, such as suggested amounts of hydrogen fluoride, scientific evidence indicates that proposed Board of Health standards should be more stringent." This could take time, she noted. "However, in general we can accept them and live with them," she said. The Board of Health's proposed standards were in line with the "best objective scientific sources available," she said, citing the National Academy of Sciences, the National Resource Council and the Public Health Service. The board's proposed standards "will most probably be identical or similar to federal standards, which will be set by the Public Health Service," she said.¹¹⁶

Hannum told the university professors in Missoula that reaction to the proposed standards by industry was made known at the May 4 Montana Board of Health meeting

when the Anaconda Company and the Humble Oil Co. requested more liberal standards. Anaconda wanted the “most flexible existing standards of other states,” but the “other states” that Anaconda cited “were all heavily populated and heavily industrialized,” Hannum noted. She summed up Anaconda’s position. “Boiled down to an attempt to make it legal for Montana to downgrade its air quality to the level of America’s most miserable cities and states – New York, Los Angeles, St. Louis, Pennsylvania, etc.,” she said. Hannum noted that the Governor’s Advisory Council “as a whole did not succumb to the pressure.” As a result, decisions on the most important and controversial pollutants were tabled at the meeting. She called for support by the professors and addressed the claim by industry that pollution control costs money. “Yes, but dirty air costs more,” she said. “It is much cheaper to control air pollution at its source than to clean up later.” Hannum cited a report that claimed air pollution in 1962 caused \$13 billion in damages in the U.S., while industry spent \$300 million on pollution control and \$28 million was spent on research and other costs. Overall, pollution costs amounted to about 2.5% of damages, and damage costs came to \$65 per capita, including cleaning clothes and buildings and replacing damaged equipment, she said. Hannum called for spending more tax money on research and enforcement of pollution controls.¹¹⁷

On May 26, 1967, after lengthy hearings, the Montana Board of Health adopted new ambient air quality regulations which included standards for fluoride emissions for the first time.¹¹⁸ Hannum presented a statement to the board on behalf of the Western Montana Scientists Committee. “Articles in leading American magazines with titles such as ‘Death in our air’ may represent ‘scare talk’ to many individuals and groups,” she said. “To scientists with knowledge of natural phenomena, the possibility of fatal consequences from air pollution represents reality.” Hannum cited the dangers of fluoride emissions in Montana. “Although the proposed ambient air standards are conservative and reasonable, we believe that in the near future the Board of Health must also set emissions standards as a vehicle for effective enforcement,” she said. “These additional standards are a necessary basis for control of pollution at its source.”¹¹⁹

On June 3, Hannum spoke in support of air pollution regulations at the Montana Wildlife Federation convention in Great Falls. “Western Montana needs air pollution controls more stringent than those necessary in many parts of the nation,” she said. The region’s mountain valleys tended to trap air movement and limit dilution or dispersion, she explained. She referred to air pollution by Missoula’s wood and pulp plants, emissions at the phosphate plant in Garrison, the aluminum smelter in Columbia Falls and particulates in Libby. “Air pollution is garbage disposal – dumping waste materials, most of them poisonous, into the atmosphere – literally using the sky as a sewer.”¹²⁰

Stopping fluoride in Garrison

While lobbyists, citizens and government officials debated air quality standards, the Rocky Mountain Phosphate fluoride pollution case moved to the Montana Supreme Court, where arguments were heard on Jan. 9, 1968. Two justices disqualified themselves and were replaced by state district court judges. The plaintiffs' attorney, Karl Karlberg of Missoula, argued that the phosphate plant had emitted "a deadly, dread poison" ever since the plant moved from Butte to Garrison in 1963. The plant's history showed "it has not policed itself, so it must be enjoined from operating forever." Karlberg noted that the company had "at least five opportunities" to clean up emissions but failed to do so. Alfred F. Dougherty, a second attorney for the plaintiffs, noted that any improvements to air pollution control were "always done a moment before facing a judge," adding, "This company is so negligent it would not make a change unless it is facing the law of the state." The two attorneys argued that the current situation "puts the policing burden upon the victims, and this is not justice – nor is it equitable to put the policing burden on the state of Montana." Malcolm MacCalman, representing Rocky Mountain Phosphate, argued that no "clear or convincing" evidence existed after 1964 to support an injunction. The plant had not been a threat to health in 1965 or 1966, MacCalman said.¹²¹

On March 19, 1968, the Montana Supreme Court unanimously upheld the \$123,284 judgment against the Rocky Mountain Phosphate made by the trial jury in Bozeman and unanimously agreed to remand the request for an injunction to the district court. The Supreme Court ordered the district court to require "that its operation will not result in the emission of quantities of fluorides into the atmosphere that will damage hay or grass and it will not, therefore, result in damage to livestock." The cost of monitoring must be borne by the plant, the Supreme Court ordered. If the plant's emissions are within safe limits between March 1966 and March 1968, then the injunction will be denied. If not, then the district court should take appropriate action, the Supreme Court ordered.¹²² In June 1968, Gallatin County District Court Judge Lessley enjoined Rocky Mountain Phosphate from operating its plant in Garrison. Lessley amended the injunction in July so it only applied to emissions of fluorides beyond the safe limit. Ranchers in Garrison appealed his ruling, requesting that the plant be permanently stopped from operating. On Nov. 15, the Montana Supreme Court ruled that the plant should be allowed to try out new \$100,000 air pollution control equipment. The Supreme Court's action prevented the Montana Board of Health from interfering in the plant's operation unless new tests indicated a health hazard existed. The Supreme Court agreed to hear arguments for a permanent injunction on Jan. 13, 1969.¹²³ The Montana Board of Health made it clear during one of its public hearings that it had shut down the

plant in Garrison at least six times but the Supreme Court had most recently allowed the company to reopen the plant.¹²⁴

The January 1969 Good Housekeeping article had reported on “the town that refused to die,” but the phosphate company also wouldn’t die. On March 3, 1970, the Montana Supreme Court ruled that Rocky Mountain Phosphate could reopen its plant after the Montana Board of Health ordered it closed on Jan. 16, 1970. The company had reopened the plant without the board’s permission on the day of the Supreme Court’s ruling. Montana Assistant Attorney General Charles H. Dickman asked the Supreme Court to either close the plant so the health board could evaluate what changes were needed to prevent fluoride pollution, or overrule an order in Gallatin County District Court that prevented the Montana Attorney General from taking any legal action in the case. The Supreme Court, however, ruled that Dickman’s argument was “insufficient” to grant his requests. Wade Dahood, the attorney representing Rocky Mountain Phosphate, said the plant’s emissions of one pound of fluoride per day were the “lowest in the U.S. today” and safe. Dahood noted that the Montana limit was five pounds of fluoride per day. “We can’t stand anymore lawsuits,” he said.¹²⁵

On March 13, 1970, the Montana Board of Health approved a recommendation by Benjamin Wake to conduct a 60-day test of air pollution control equipment at the phosphate plant. Wake said he had been skeptical of the company in the past because of its “sloppy” operations, but he based his recommendation on observations and recommendations from the U.S. Public Health Service and Aaron Teller, the dean of engineering at Cooper Union. Wake said a scrubber unit installed at the phosphate plant was “adequately designed for the present state of the art,” but he still had concerns about further damage to vegetation and even cattle. Wake said he wasn’t confident about whether company’s personnel would conduct proper maintenance and operation of the equipment. He also had concerns about the company’s plans to install a second kiln to treat phosphate, which would increase production levels.¹²⁶ The plant continued to operate until Jan. 9, 1976, when Rocky Mountain Phosphate closed for the last time, according to a report from the state employment office in Anaconda. Company owner Bryce Rhodes had reported in mid-1975 that sales numbers for his Phos-For Feed supplement business were down about 50% because depressed cattle prices led to fewer ranches taking cattle to feed lots for supplements.¹²⁷

In the end, it was market economics that closed the phosphate plant, not the impact of air pollution regulations on business. But as the Montana Board of Health narrowed down its selection of air quality standards, industries raised the specter of the new regulations forcing companies to leave Montana. On Oct. 25, 1968, representatives from coal-fired generating plants and wood industries at a Montana Board of Health hearing

on proposed state air quality standards warned that they would take their business elsewhere or shut down if the standards were too strict.¹²⁸ On Nov. 14, 1968, the Helena Independent Record published an editorial that criticized a message the Montana Chamber of Commerce sent to its members about proposed state air quality standards. “We have favored air pollution controls providing such controls did not jeopardize the economic life of existing industry in the state nor prohibit industrial growth for the state’s future,” the Chamber had told the Montana Board of Health at an earlier meeting. The newspaper editorial took a different position. “If industry can get away with saying it will move out of the state because of tough air pollution regulations, where will it all end?” the editorial asked. “The state Chamber should let go of the panic button and recognize that clean air may be more of an encouragement to the kind of industry Montana wants and needs than a threat to the economic well-being of the state.”¹²⁹

Regulating the Anaconda Company

The Montana Board of Health took on new air pollution standards for sulfur dioxide emissions beginning with a public hearing on Nov. 21, 1969. In preparation for the hearing, Gov. Forrest H. Anderson wrote to John Anderson, executive officer for the Montana Department of Health. The governor noted that from the very beginning of his administration, he had “encouraged all realistic proposals to protect the environmental quality of our air and water.” He then asked the board to look at the sulfur dioxide regulations in Montana’s neighboring states, particularly with regard to coal deposits and the burning of coal to generate electricity. “I would not wish to see Montana at a disadvantage in the overall economic development of the region,” Gov. Anderson said. “I consider the threat to our environmental quality one of the major challenges to society. We must enact measures to protect it. At the same time, we must be cognizant of the need to encourage economic opportunity and expansion.”¹³⁰

Hannum, who attended the Nov. 21 Montana Board of Health hearing, spoke out that she had only learned about the hearing 24 hours earlier. “The thinness of public attendance at this meeting bears witness to my complaint,” she told the board. She wanted to know why advance notice was not made to the public about the hearing. “Is not public health a public issue” she asked. “Should not any threat to public health – whether proven or suspected – be fully publicized? Does not the public agency with the mandate to protect public health have the duty to provide public information on such a threat?”¹³¹

Montana’s air pollution debate continued to attract national attention. On Feb. 14, 1970, Washington Post reporter Haynes Johnson explained how moderate conservatives, often Republicans, had become environmentalists as a result of extreme

air pollution problems in the Missoula Valley. “You can’t be a politician in Missoula and say the companies are right and get elected,” Missoulian Editor Sam Reynolds was quoted in the article. People looked at new industries coming to the valley not just as sources of jobs but as problem polluters. Johnson also reported on the difference between pollution’s impacts on human health and to the natural environment. “What is pollution actually doing to the plants and animal population?” Arlene Dale, Clancy Gordon’s research assistant, asked in the article. “Those who say no one’s died in the Missoula Valley from pollution are completely missing the point. The valley is on the decline. At the rate it’s going, it may be 50 years or a hundred years before it’s a dead valley. If you want to see an example of what I’m talking about, go down to the Anaconda Valley. You’ll see what I mean. The smelter operations there before the turn of the century killed it. It’s a moonscape, a pockmarked desert. Essentially the same thing is happening to the Missoula Valley. The decline has already set in. We know that.”

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Beginning June 30, 1970, all heavy industry in Montana which was not already under local control for air pollution was subject to control under the state Board of Health. Industries which did not meet the state’s standards for emissions were required to obtain a variance. A question existed over how variances would be issued, since it was considered a relatively easy process in many other states. “Variances will not be easily obtained – just for the asking,” Board of Health Chairwoman Virginia Mann said in a Lincoln Day speech. “Too much is at stake... We on the board are going to be fair, but firm, and any industry seeking a variance is going to have to present a good case, founded upon the facts, and having a specific time table to insure performance... In the granting of variances, it is going to be performance that counts.”¹³³ In November 1971, as director of Montana’s air pollution control program, Benjamin Wake gave his opinion on the Anaconda Company’s attempt to get sulfur emission standards lowered. He called for keeping the state’s strict sulfur and sulfur oxide emission level standards on the books, pointing out that a lowering of the standard could “become common practice” for other companies.¹³⁴

On Dec. 15, 1971, Anaconda Company CEO John B.M. Place talked about the company’s future at an air quality standards hearing. Expansion plans for its copper plants depended on whether Anaconda would need to spend \$22 million to meet proposed air quality standards. The company was considering a 17% expansion soon and another 40% expansion later. Place said Anaconda was committed to spending \$30.7 million for environmental controls to meet federal standards at its copper plants, but “spending additional sums would be engaging in environmental overkill” and would be a “\$21 million bonfire.” Elizabeth Hannum attended the hearing and commented on what she said was Anaconda’s focus on economic issues – what was cheapest and most common.

But that focus ignored the moral question of whether it was right “to poison the earth,” she said.¹³⁵ “Americans have often been accused of ignorance and arrogance in their attitude toward nature and the biological essentials of life on earth,” Hannum told the Montana Board of Health. “Until recently, I think, these accusations were valid. But no longer. For most of us, the awareness of danger and the sense of loss have been a crash course into knowledge and concern.”¹³⁶

In February 1972, Gov. Anderson refused to sign the Montana Department of Health’s implementation plan for air quality standards as required by the federal 1970 Clean Air Act. Anderson pointed out that the state’s air pollution regulations were more stringent than those used by the U.S. Environmental Protection Agency and might be the toughest in the nation. By refusing to sign the state plan, Anderson opened the door for the EPA to come in and regulate air pollution in Montana. The health department’s proposed regulations were based on the state’s 1967 Clean Air Act. The Hungry Horse News pointed out in an editorial, “Whatever the situation, Montana has been overdue for improved pollution control. The people of Montana in the past were too tolerant of smoke, fluorides, sulfur, arsenic and land and water spoiling. Issue is how fast the sin should be corrected.”¹³⁷

Montana Board of Health Vice Chairman John Bartlett defended the governor’s refusal to sign the board’s proposed air pollution control plan. The board felt it had the responsibility to enforce the state’s 1967 clean air act, he said, but the governor had to look at the bigger picture and Bartlett believed a compromise was possible. “The Board of Health feels they can protect the lunch buckets as they have in the past with variances which encourage industry to achieve cleaner air and comply,” he said. Critics saw the Board of Health setting high standards for air pollution control and then rewarding industries that made an honest effort to comply by providing them with variances. In the meantime, Gov. Anderson declared that he did not want the federal government to establish air pollution standards because it was too soon to make those kinds of decisions. He called for states to work together as a region.¹³⁸

By August 1978, air pollution in Anaconda continued to be a major problem in the state. The Montana Air Quality Bureau reported that sulfur dioxide levels near the copper smelter were higher and more frequent than before the Anaconda Company installed \$63 million worth of new air pollution control equipment. Statistics showed the smelter violated federal air quality standards for sulfur dioxide 219 times from January through April 1978. Readings taken at a monitoring station about two miles from the smelter were two to three times higher than before the company installed an electric furnace, acid treatment facilities and the best available air pollution control equipment, bureau monitor Dave Maughan said. He speculated that the pollution control equipment cooled

exhaust gases, making them less buoyant and harder to disperse in the surrounding environment. Sulfur dioxide was not harmful by itself but could combine with other pollutants in the air to cause serious damage, Maughan said. Excessive levels could irritate the mouth and lung membranes, he said.¹³⁹ The Air Quality Bureau estimated it would take four more years and another \$25 million for the smelter to comply with federal sulfur dioxide standards. “Their work on the smelter may have done them more harm than good,” Maughan said, but the new equipment had modernized the plant enough that future improvements would be less expensive. The additional money would be needed to add another acid treatment plant to treat exhaust gases and reduce stack emissions.¹⁴⁰

The Montana Board of Health and Environmental Sciences approved another one-year variance for sulfur dioxide emissions at the Anaconda copper smelter during a public hearing on Nov. 16, 1978. The Anaconda Company was required to demonstrate that it was making progress toward complying with a new sulfur dioxide control plan that was adopted along with the variance approval. The new control plan was mandated by the federal government after it agreed to back off from an EPA plan. The state plan called for a sulfur dioxide standard of 11,800 pounds per hour averaged over 24 hours, but the smelter emitted 57,400 pounds per hour over the first four months of 1978. University of Montana graduate students Gael Bissell and Natalie Walsh, on contract with the Forest Service, testified that sulfur dioxide emissions from the smelter were harming plant, animal and human health in the vicinity of the smelter. They urged the board not to grant the variance and instead to impose fines or other incentives to force the Anaconda Company to speed up air pollution control measures. Anaconda Company attorney Steve Foster and smelter manager Mel Stokke said the company was doing its best to control sulfur dioxide emissions, including looking at installing a second acid treatment plant.¹⁴¹

On May 15, 1979, Donald Pierce, the Forest Service’s regional director of forest insect and disease management, announced that preliminary results from a new study showed that emissions from the copper smelter in Anaconda had caused “extensive and irreparable ecological damage” to the surrounding forest. The study was initiated by Clinton Carlson, a former air pollution specialist for the Forest Service who was completing a Ph.D. dissertation on the impacts of fluoride pollution by the Anaconda Aluminum Co. smelter in Columbia Falls. According to Bissell and Walsh, who helped prepare the report, the Anaconda-Pintler Mountain Range southwest of the Anaconda copper smelter provided an “ideal field laboratory in which to evaluate the potential cumulative effect of long-term exposure to sulfur dioxide and particulate pollution on a wilderness-like mountain ecosystem.”¹⁴²

Anaconda shuts down

On Sept. 9, 1980, Anaconda Company President Ralph Cox said that, contrary to rumors, the state's tough air quality standards had not affected the company's evaluation of whether to keep its copper smelter operating in Anaconda. Cox said a decision would be made by the end of the month about whether it would rebuild the smelter, build a new smaller smelter elsewhere in Montana or another state, or quit smelting in Montana altogether. He said stricter environmental regulations were "not a Montana problem" but a "national trend" and "society's choices." Cox said other factors that would be considered by the company included unpredictable global copper prices, competition with Third World countries with less strict environmental regulations, transportation costs for an inland operation, general economic conditions worldwide and the problem of how to get rid of byproducts.¹⁴³

The Anaconda Company dropped a bombshell on Sept. 29, 1980, when it announced that federal environmental regulations and economic conditions had forced the company to decide to immediately "mothball" its copper smelter in Anaconda and its copper refinery in Great Falls. About 1,000 workers would lose their jobs in Anaconda and another 500 would lose their jobs in Great Falls. Open-pit mining operations in Butte were expected to continue for many years to come, Anaconda President James L. Marvin said, as arrangements were being made to smelt the concentrates outside the state. The Anaconda smelter had been in operation since 1902 and shipped its processed ore to Great Falls for refining. Without the Anaconda smelter, the Great Falls plant could not continue to operate. Acting Montana Gov. Ted Schwinden called the company's decision to "indefinitely suspend" operations an economic "disaster." Marvin said "prospects appear very slim" that the two plants would ever reopen. Both plants had been closed by a strike since June 30 and they would not be reopened at all, the company said. Marvin said the decision was not based on the current labor strike but was based on environmental and economic factors. "The company had determined by in-depth studies that the existing plant cannot be retrofitted to satisfy environmental standards and become cost-competitive with modern, large-scale smelters," Marvin said. The federal air quality standards would need to be reduced to nearly zero, levels that existed long ago, in order for the smelter to reopen, he said. "We know of no technology in existence today which would allow us to retrofit these facilities to meet existing regulations," Marvin said.¹⁴⁴

Reaction by Montanans to the Anaconda Company announcement was swift. Anaconda-Deer Lodge County Commissioner Luke McKeon publicly demanded that the Montana Legislature force the company to reclaim land in Deer Lodge Valley that it had damaged by a century of copper processing. McKeon cited reclamation regulations for coal mines

in eastern Montana and demanded the same level of protection.¹⁴⁵ In an Oct. 23 newspaper column, K. Ross Toole described the deceit of the Anaconda Company and its new owner ARCO. "Montana's clean-air standards posed no threat to Anaconda's operations, any more than the federal air standards did," he said. "Both the state and federal officials have made this absolutely clear to ARCO again and again." Toole described the breaks the mining company received over the decades. "The fact of the matter is Anaconda has received variances consistently since 1920 in spite of massive poisoning of people, land and livestock and was told both by (Gov. Thomas Judge's) administration and the EPA it would continue to receive all necessary variances if these regulations were to be the deciding factor in any decision to shut down," Toole said. He rallied Montanans to deal with the new situation. "We must resolve now to take control of our economic destiny," he said. "We must not abandon protection of our environment in a mad dash to attract outside investors on whatever terms they will give us." He called on using the state's coal tax trust funds to promote small, clean, locally-owned Montana industries.¹⁴⁶

In the blame game that followed, politicians and government agencies argued that environmental protection did not force the Anaconda Company's decision. On Oct. 25, 1980, Montana Sen. Max Baucus' office announced it had received a letter from the federal Occupational Safety and Health Administration stating that ARCO had sufficient funding to build a \$2.8 million arsenic control facility at its copper smelter if ARCO chose to restart the closed smelter. OSHA had asked for the arsenic control facility after finding 147 lung cancer deaths among high-exposure workers when only 45 were expected. Baucus' staff had been looking into why ARCO had decided not to reopen the Montana smelter and so far found that the company had decided it would be cheaper and more efficient to build a new combined smelting and refining plant in Louisiana with good access to international shipping. Meanwhile, the EPA had told Baucus that it didn't know if new sulfur dioxide standards were the reason for ARCO's decision to close the Montana plants. The EPA said ARCO had never asked for administrative relief and had been working with the EPA on a compliance plan.¹⁴⁷ On Nov. 26, Montana Sen. John Melcher reported that the EPA had decided to seek outside help in determining what it would cost to retrofit the copper smelter so it could operate another five to seven years and be in compliance with federal environmental standards. The EPA had said it might cost \$43 million, while the Anaconda Company estimated costs in excess of \$200 million. With the smelter in Anaconda closed, the company was reportedly stockpiling ore in Butte that might be shipped to Japan for processing.¹⁴⁸

The Anaconda Company confirmed the story about stockpiling for Japanese processing on Dec. 15, 1980, and repeated the earlier announcement that the smelter in Anaconda and the refinery in Great Falls would not be reopened. An EPA plan to keep copper

processing in Montana required that the company begin building a new smelter by Jan. 1, 1983, and complete construction by Jan. 1, 1988. The company, however, rejected the EPA offer to keep the Anaconda smelter open until a new smelter could be finished, citing stricter federal air quality standards and stricter OSHA standards for plant workers. Melcher called Anaconda's decision "reprehensible." He said ARCO had "chosen to deny Americans jobs, and they haven't heard the last of this." Melcher also criticized the EPA for delaying its decisions. Meanwhile, EPA Deputy Regional Director Gene Lucero said an EPA investigation had found reasons other than air pollution for ARCO's decision to close the Montana plants. "The primary reason is that currently there is a surplus of smelting capacity in the world," he said.¹⁴⁹

Four days later, Anaconda Company President Ralph Cox told a Montana legislative committee that the state's air quality standards were too strict and that his company would probably never build a new smelter in Montana. He said the company's decision to close the plants in Anaconda and Great Falls were "final and irrevocable." The company was considering building a new smelter, but it would be located near a seaport. Cox also said he was surprised by the shock shown by Montana officials and citizens since the company had been warning about the possibility of the plants closing for the past three years in light of the smelter's aging equipment and tougher environmental and health regulations. James L. Marvin said the company would seriously consider shutting down mining operations in Butte if the Montana Legislature moved toward establishing a 10% to 30% severance tax on metal mining. Gov. Judge also sharply criticized the idea of the severance tax. Sen. Baucus, who had criticized the Anaconda Company for its historic practices, also called for tax and economic policies that would encourage future industrial growth.¹⁵⁰

On March 19, 1981, the EPA released a report stating that the cost of complying with state and federal air quality standards was not the dominant factor in the Anaconda Company's decision to close its Montana plants. The EPA said that it found the company's claim that environmental compliance would cost \$400 million to be "overstated, misleading and cannot be substantiated." The EPA investigation was requested by several labor unions. "The smelter was a marginal operation," EPA Regional Administrator Roger Williams said. "Its historically low profitability can be traced to high operating costs associated with an energy-intensive smelting process." About half of the costs the company cited for an environmental compliance program instead would be used for plant process improvements. The company disagreed. Spokesman John Calcaterra said complying with environmental and health regulations were a main issue for the company.¹⁵¹

On April 15, 1981, the Montana Legislature's Select Committee on Economic Problems released a study on the economic impacts of Anaconda's decision to close its copper smelter and refinery in Montana. The committee concluded that a combination of factors rather than environmental regulations appeared to be the reason for the company's decision. But attached to the report was an April 8, 1981, letter from Anaconda Copper Co. Vice President J.F. Anderson taking issue with the EPA's conclusion that downplayed the role of environmental regulations on the company's decision. "Without new environmental costs, the smelter was the most economical option available and would have continued operating," Anderson said. The legislative committee said it received the letter too late to include it in its report. Anderson noted that the EPA's criticism of the company's \$400 million estimate to bring the smelter into compliance had labeled some of the recommended changes as plant process improvements, not air pollution control measures. Anderson sharply disagreed – all of the improvements were tied to environmental measures. Anderson noted that concentrates from the Butte mines contained too many impurities and were difficult to process in a smelter. The legislative committee found that other factors were the deciding issues for shutting down the two plants, including declining profit levels that resulted in less investment capital available to invest in the plants, the costs of modernization, tax policies, diminishing ore quality and management decisions on the best way to spend capital. The committee also responded to criticism that it was implacable by noting that it had endorsed the repeal of fluoride standards adopted by the Montana Board of Health in July 1980.¹⁵²

More than two decades after ARCO announced it was shutting down the Anaconda Company's copper smelter and refinery, effectively stopping the century-long pollution of the Silver Bow and Deer Lodge valleys, a state lawsuit over damages to land near the plants was still being adjudicated. On May 13, 2003, U.S. District Judge Sam Haddon ruled against the state in *Montana v. ARCO*. The state had sought about \$47.5 million for damages to 11,000 acres on Mount Haggin, the old Smelter Hill and Stucky Ridge, north of town, which had allegedly been damaged by fumes from the Anaconda smelter. Haddon ruled that the damages occurred prior to December 1980, and Superfund law stated that natural resource damages could not be recovered for impacts that "wholly occurs" before that date. The federal Superfund law was enacted in December 1980, and Montana's Superfund law was enacted in 1985. The state's argument that damages did not occur until "a trustee incurs expenses to restore the resource or restoration costs are quantified by the court is unpersuasive," Haddon wrote. "If the term 'occurred' was construed as argued by Montana, the 'wholly before' limitation in the statute would be rendered meaningless." The state had also argued that damage to natural resources still continued. Haddon's decision would not affect a 1999 settlement between Montana and ARCO for \$260 million.¹⁵³

Destructive air pollution by the Anaconda copper plants in Montana came to an end when the company decided to shut down the smelter and refinery, not by effective air pollution control means. The reasons for the company's decision were debatable, but the economic justification was commonly cited by industries across Montana facing the state's new air pollution standards – particularly the timber industry, which was first in line to meet the new standards. Next in line were new industrial facilities. Near the end of the line was the Anaconda Aluminum Co. smelter plant, which faced a number of economic challenges at the same time – higher power costs, higher raw material costs, uncertain metal markets, and the acquisition of the Anaconda Company by ARCO, an oil company. Elsewhere in line for air pollution regulation were the state's towns and cities, where unpaved streets were blamed for dusty clouds that sometimes were considered worst than industrial emissions.

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