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Archive for Tuesday, April 28, 1998

State Dairy Farms Try to Clean Up Their Act

By Marla Cone

April 28, 1998 *in print edition A-1*

Louie Pratt can stand on any corner, gaze out on the horizon in any direction and see cows. They are everywhere, but more important, so is their most abundant byproduct.

Not milk. Manure.

In California, the nation's largest milk producer, cows spew as much waste as every man, woman and child. But unlike the massive network for purifying human sewage, there are no toilets, no sewers, no treatment plants for farm animals.

Each day, when Pratt climbs into his truck to inspect the Central Valley's dairy farms, cows have excreted another 80 million pounds for him to watch over. And to his dismay, much of it winds up in California's water.

On a recent spring day in San Joaquin County, Pratt watched a herd wallowing up to their bellies in their own urine, manure and mud. Thick brown sludge flowed from the farm into a roadside creek.

"This," Pratt grumbled, "is a filthy mess."

Indeed, the handling of California's voluminous cow manure—more than 55 billion pounds a year—is fraught with environmental problems. In the Central Valley, dairy cows, largely concentrated between Sacramento and Tulare, are blamed for poisoning hundreds of square miles of underground water, rivers and streams, according to a 1996 State Water Resources Control Board report. Dairies in San Bernardino and Riverside counties have helped cause massive water problems there, which now threaten drinking supplies downstream in Orange County.

In recent years, farms have replaced factories as the main threat to the nation's waterways. Agriculture—crops and livestock—is the No. 1 source of water pollution in the United States, according to the EPA's 1994 National Water Quality Inventory.

After a quarter of a century of neglecting clean water laws, California and federal officials have stepped up efforts to make cows—and the farmers who raise them—environmentally friendly.

A new clean water task force has cracked down on Central Valley dairies, beefing up inspections and prosecuting farmers.

Last month, the U.S. Environmental Protection Agency, facing a growing national threat from cows, pigs and poultry, unveiled plans to regulate more than 6,000 large livestock farms as if they were factories.

Over the past decade, many dairies have turned into “factory farms”—mega-milking operations with thousands of cows apiece. With more animals squeezed onto less acreage, the threat to the nation’s waterways has magnified.

“It’s not the bucolic farm where they’re driving cows out to pasture anymore,” said Daniel Meer, the EPA’s regional water quality compliance chief. “It’s a big business, and they’re generating a lot of waste. In California, when you look at the scope of the problem, it’s pretty sobering.”

State and federal inspectors suspect that a majority of California’s 2,400 dairies are illegally allowing manure to pollute water. Even with the new emphasis on enforcement, they say the chances of a farmer violating the law are high and of getting caught slim.

Last month, an Oakdale dairyman was sentenced to 90 days in jail and given a \$100,000 fine for spilling cow feces and urine into streams 10 times over four years. Another, near Modesto, was fined \$50,000 in November because so much manure ran off his fields onto a highway that the local school refused to run buses there and the postal service threatened to stop delivering mail.

“Some individual farmers are thumbing their nose at us,” said Assistant U.S. Atty. Richard Cutler, who heads a state and federal law enforcement task force aimed at Central Valley dairies. “It’s comparable to 30 years ago when the majority of [manufacturing] industry was blatantly discharging into the waters of the United States.”

Law Wants ‘Zero Discharge’

Since the early 1970s, farmers have been prohibited by law from letting even a drop of manure flow off their land, except during severe storms. “Zero discharge” is the mandate of the U.S. Clean Water Act and California laws.

But while enforcement of the laws has been strict for other industries, in agriculture it has been lax for more than two decades.

Until this year, the state water quality board had only one inspector—Louie Pratt—for the 1,000 dairy farms from Orland, north of Sacramento, to Fresno, and none for the 600 dairies between Fresno and Bakersfield. Now there are four, and the board is seeking funds in next year’s budget to add four more to keep an eye on the Central Valley’s ubiquitous cows.

Home to 1.3 million milk cows, California produces one of every five gallons of milk consumed in the United States. Each animal excretes 120 pounds of waste a day—equivalent to the sewage of two dozen people.

“Environmental stewardship has to be a priority. The modern dairyman has to know that,” said Gary Conover of Western United Dairyman, a lobbying group for the industry. But, he added, the laws’ bans on pollution are so stringent that it is hard for dairies to comply, especially during winters when rain turns manure into runoff.

For dairymen, living with manure is a fact of life.

They scrape it, drain it, pump it into ponds, pile it up in 10-foot-tall heaps, spray it onto fields. Coping with the mess is a dirty and grueling job.

Many dairies wind up with too much manure and not enough land to spread it on. They load their crops with so much waste that it’s beyond fertilization—it’s dumping. The manure, washing off their farms, gushes into creeks that empty into the Sacramento-San Joaquin Delta, the sprawling estuary for rare fish and birds.

Also, when corrals aren’t scraped of the thick layer of muck, or when ponds for storing liquid manure are too small or poorly engineered, the sludge seeps into the soil and pollutes aquifers that supply drinking water.

Clean Farms Increase Profits

Animal waste can be just as dangerous as chemicals dumped by a factory. Nitrates and coliform bacteria render

ground water unsafe to drink. Minuscule amounts of ammonia kill fish and other aquatic life. Nitrogen and phosphorous—called nutrients—spur algae blooms and deplete oxygen in water, smothering fish.

But, experts say, cows do not have to harm the environment. If a farm is designed and run properly, manure can be rendered harmless.

When John Duarte built a dairy in Elk Grove, south of Sacramento, he included a waste system that keeps his cows clean. Instead of pooling at their feet, excrement drains from the stalls into a central alley and is pumped into an expansive settling pond. Then it is sprayed onto his oat and corn fields. A roof over the stalls keeps rain out to reduce runoff.

“This is what a dairy should look like,” said Pratt of the Central Valley Regional Water Quality Control Board. “Design, construction and management make or break a dairy.”

A dairy worker since he emigrated from Portugal at 13, Duarte said it bothers him when others are careless with manure. All dairymen get the same government-fixed price for their milk—about \$1 per gallon—but many aren’t paying for the hardware and labor to control waste.

Managing manure is a big, costly job, Duarte says, but it keeps his farm legal. And, he says, it actually increases his profits. Clean cows are happy cows, and happy cows produce more milk. He estimates that production is up 40% because his cows aren’t slopping around in their own waste on rainy days.

Duarte keeps his herd small—300 milking cows—so manure doesn’t overload his 80 acres. Some of his colleagues have cow-to-crop ratios two or three times higher, which boosts their profits but makes it more likely that waste flows into waterways.

Nine years ago, when he built a \$35,000 waste pond, fellow dairymen wondered why. Now, with the government cracking down, they are seeking his advice.

Yet, many dairy farmers are unwilling to spend the time or money or are reluctant to modernize practices that have been handed down for generations.

“Some people are trying to do the right thing, but some clearly are not,” said Meer of the EPA. “Industry claims it’s a small percentage that are the [violators], but based on what I see, I don’t agree.”

Pratt, who has monitored livestock farms in the northern half of the Central Valley for 14 years, said, “Judging from my experience, I’d say probably 80% have some impacts on surface water or ground water.” Many of the dairies are concentrated near the Merced, San Joaquin and Tuolumne rivers.

From Fresno to Kern County, where inspections began in January, more than half of the 50 farms inspected had problems that threaten ground water, said Lonnie Wass, a water board senior engineer.

Under its new national strategy, EPA officials for the first time will inspect large livestock farms. Farms with more than 700 cows, 2,500 hogs or 100,000 chickens will be regulated just like chemical plants, oil refineries and others that discharge into waterways.

Under pressure and fearing prosecution, the dairy industry is trying to clean up its act.

Some farmers are going to school, enrolling in a new course at UC Davis to learn skills for handling manure. Leaders in the politically powerful industry are seeking government funds to upgrade dairies and get technical help. The chairs of the Legislature’s two agriculture committees have urged environmental agencies to educate—rather than prosecute—dairymen.

Conover of Western United Dairymen said the industry had been unaware of the scope of its environmental problems until recently because the government had neglected it for decades.

Solutions, he said, will take time, money and education.

“If the state and federal government are serious about assisting us, we can do it,” he said.

More Cows but Fewer Dairies

California dairies earned nearly \$4 billion last year—double the earnings of the state’s citrus groves. But farmers say profit margins are small and installing waste systems can lead to serious debt. A waste pond and pumps cost a medium-sized dairy \$40,000 to \$82,500, according to a General Accounting Office report.

Some farms might not be able to fix their problems with drains, pumps and ponds. For some, it may take fewer animals.

Because California has more cows but fewer dairies than a decade ago, a dairy farmer may have to shrink his herd, which cuts into milk profits, or buy more cropland for spreading the waste at several thousand dollars an acre.

Some are saddled with so much manure that they might have to haul it to other farms or find ways to sell it as fertilizer.

“If you fail to keep a proper ratio between your [waste] and your cropland, you won’t meet the stringent requirements of environmental laws,” Conover said. “That’s the jeopardy that some dairymen have been placed in.”

Nationally, the growth of “factory farms” from the consolidation of the livestock industry has led to widely publicized environmental problems along the East Coast. Massive fish kills and toxic algae in North Carolina and the Chesapeake Bay, among other places, have been blamed on pigs and poultry.

California occasionally has fish die offs traced to livestock waste, including one this month in Westport Drain, which empties into the San Joaquin River.

In most cases, however, the creeks are so polluted with manure that the fish vanished many years ago. Creeks that empty into the Tuolumne and San Joaquin rivers frequently contain 200 times more ammonia than the poisonous level for fish.

“There’s no way fish can survive in that kind of environment,” Pratt said.

Water quality officials suspect that dairy manure is one of the sources of pollution that has depleted the delta’s fisheries, since the creeks are vital spawning and feeding grounds.

“You can’t have a healthy population of fish in the rivers unless you have healthy tributaries,” Pratt said. “You give them clean water and the fish will come.”

In the United States, almost 135,000 miles of rivers—22% of the waters studied—are “impaired” by agricultural pollution, which means that aquatic life is unhealthy or fishing and swimming are restricted, the EPA report says.

In California, agriculture has impaired more than 4,000 miles of rivers and streams, including at least 56 miles blamed on dairy farms.

Ground water—a precious resource in a state facing chronic water shortages—has been rendered undrinkable in the Central Valley and Southern California.

More than 10,000 square miles of aquifers in California are polluted with nitrates—and state officials say that agriculture, including cows, is the major source.

In tests of wells at 13 dairy farms in the Central Valley, all had excessive nitrates, Pratt said. One had 17 times more than what is considered safe.

Nitrates are dangerous to infants because they can cause blue baby syndrome, an oxygen-depleting disease. At many farms, cows drinking the water abort their calves, and farmers have to dig deeper and deeper wells to find water safe enough to drink.

Farmer Sentenced for Pollution

The Central Valley only has to look to Southern California to see what fate could await its valuable underground water supply.

In San Bernardino and Riverside counties, water in more than half of the Chino Basin, which stretches 245 square miles, is too contaminated with nitrates for people to drink.

Dairies in the Chino area deserve much of the blame, regional water quality officials say, although old citrus groves and modern municipal sewage plants also contribute nitrates. Decontaminating the water will cost millions of dollars.

"It's too late here for prevention," said Kurt Berchtold, assistant executive officer of the Santa Ana Regional Water Quality Control Board. "We're talking about huge amounts of water that are not usable as drinking water without treatment, and it's likely to get worse before it gets better."

This year has been especially bad because heavy rains have sent Chino's cow waste flowing down the Santa Ana River and into the aquifer that supplies half of Orange County's drinking water.

The Chino dairies are the most regulated in the state, perhaps the nation. Routine inspections have been conducted since mounds of manure washed into residential neighborhoods during a severe flood in 1969. Many of the farms have moved or closed because of the high cost of running an environmentally sound dairy in Southern California.

In the rest of California, however, manure problems have drawn scant attention—until prosecutors took aim at Pete Hettinga.

Last month, Hettinga, who runs a large dairy in Oakdale, near Stockton, became the first dairyman in the state to receive a jail sentence for polluting water. Accepting a plea bargain for 10 misdemeanors, Hettinga will serve 45 weekends in jail and 90 days in home confinement. He must spend \$100,000 to buy more cropland and make other water quality improvements at his farm.

Industry leaders call the jail sentence extreme because there was no evidence that fish were harmed.

"We do think it's absolutely proper that [Hettinga] return his property to a ratio of animals and cropland that provides environmental stewardship," Conover said. "Our only concern was the jail time. You have criminals in society perpetrating more heinous crimes, and here's a minor violation of a Clean Water Act."

Conover, however, acknowledges that the jail sentence "has absolutely encouraged the industry to sit up and say we apparently have a problem."

Now the industry faces the challenge of fixing dairies without putting them out of business.

"This problem took decades to develop," Meer said, "and it's not something that's going to be solved very quickly. There's going to have to be some pretty creative strategies."

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Dairy's Downside

California is the nation's largest milk producer, generating about 21% of the nation's supply. The industry also generates 55 billion pounds of manure yearly, much of which flows into waterways and poses an environmental threat.

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Milk Manure Milk cows (pounds) Annual Sales (pounds) 1987 1,061,000 17.9 billion \$2.1 billion 46.4 billion 1996
1,64,000 25.9 billion \$3.7 billion 55.5 billion

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Milk Production

Possible runoff: When too much manure is applied to crops, the excess flows off the farm as pollution.

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Each cow per day: 120 lbs. Manure, 70 lbs. Milk, 270 lbs. Feed and Water

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Corrals: When corrals aren't cleaned often, waste seeps into aquifers that provide drinking water.

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Possible runoff: When ponds for storing liquid manure are poorly designed, it runs off the farm and pollutes creeks and rivers.

Researched by MARLA CONE / Los Angeles Times

Sources: California Dept. of Food and Agriculture and California Milk Advisory Board

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