Amazon Crude

Judith Kimerling with the
Natural Resources Defense Council

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with

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Look at the land. Our grandfather lived here. So do we. It is our land here, here we used to live. Stranger, touring around you will not come, you will not come. We lived over these hills, we still do, because the forest is our life.

Huaorani chant, translated by Laura Rival

I want to stamp on the ground hard enough to make that oil come out. I want to skip legalities, permits, red tape, and other obstacles. I want to go immediately and straight to what matters: getting that oil.

Rick Bass, Petroleum Geologist, 1989

Quichua garden in Limoncocha.

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Robert F. Kennedy, Jr. points to a typical outfall from a pit at a well, draining wastes into a nearby stream.

Preface by Robert F. Kennedy, Jr.

Like most U.S. citizens, I like to believe that when American companies go abroad, American values go with them. This hasn't happened in Ecuador. Today, American-owned companies are leaving an ugly legacy of poverty and contamination in one of the most important forests on earth.

In July 1990, I flew to Quito, Ecuador's capital, as part of a team of environmental experts from the Natural Resources Defense Council (NRDC) to meet NRDC's Ecuadorian representative, Judy Kimerling, and survey damage caused by oil exploration in the Amazon. Because of my longstanding interest in tropical rain forests, I had made fifteen previous trips to Latin America and my work as an environmental lawyer during the past seven years had brought me to some of the worst toxic waste sites in New York. I did not expect to be surprised. However, nothing in my experience prepared me for the scenes that Judy Kimerling showed us in the Ecuadorian Amazon. Most people know that the Amazon rain forest is endangered. But the role of U.S. oil companies in its destruction has largely gone unnoticed by the outside world. Because of the remoteness of the Amazon's oil fields, much of what we witnessed on that trip had never been recorded before.

The Ecuadorian Amazon is among the most biologically diverse forests on the globe. Some scientists believe that the Oriente, Ecuador's great rain forest, was one of the few regions of the Amazon basin that remained humid during the Pleistocene ice ages and that areas like this one would probably function as "safe houses" or speciation centers again, should major or minor climactic shifts occur.

The Ecuadorian officials regards the rich deposits of heavy grade crude oil 10,000 feet beneath the Oriente as its best hope of keeping pace with its $12 billion foreign debt obligations. For almost twenty years, American oil companies, led by Texaco, have pumped oil from the Ecuadorian jungle. They have created an infrastructure that includes over 400 drill sites, hundreds of miles of roads and pipelines, and a primary pipeline that stretches 280 miles across the Andes.

The Ecuadorian government ~~est~~imates that ruptures to the major pipeline alone have discharged over 16.8 million gallons of oil into the Amazon over the past eighteen years (compared to the 10.8 million gallons of the Exxon Valdez spill). Discharges from secondary pipelines have never been estimated or recorded, however, the smaller flowlines discharge approximately 10,000 gallons per week of petroleum into the Amazon, and each day production pits dump an astounding 4.3 million gallons of toxic production wastes and treatment chemicals into Amazonia's rivers, streams, and groundwater.

In 1972, Texaco signed a contract requiring it to relinquish all its operations to Ecuador's national oil company, Petroecuador by 1992. Today, Texaco is in the final stages of handing over its antiquated equipment, rusting pipelines, and uncounted toxic waste sites.

The industry's practice of burying highly toxic drilling muds virtually assures the destruction of the Oriente's groundwater aquifers, while the region's surface water is being destroyed by pipeline spills

Exploratory well site in primary forest.

and production pit discharges. By far the most disturbing impacts are to the quarter million forest people, including the members of eight indigenous tribes who rely on the natural resources of the Oriente for their survival. In Ecuador, says Jacob Scherr, an international environmental expert, "it's like a giant oil spill has been going on for twenty years and nobody knows about it. It's the Exxon Valdez times twenty." Judy Kimerling's work has made this tragedy public for the first time.

Ms. Kimerling is a graduate of Yale Law School and a former New York State assistant attorney general who fought Occidental Petroleum over its hazardous waste sites at Love Canal and Niagara Falls. In February 1989 she went to Ecuador, where she studied the impacts of petroleum development with a particular interest in the involvement of American corporations. Over the next eighteen months, she gained the confidence of indigenous people and environmentalists impressed by her commitment and skills. Enduring arrest and other threats to her own health and safety, she traveled repeatedly to the jungle oil fields, visiting isolated communities and drill sites, travelling in crowded buses and dugout canoes, and sleeping on floors in jungle huts. She developed relationships with oil workers, colonists, indigenous people, scientists, soldiers, and government officials, and documented the disaster of oil development in the Ecuadorian Amazon.

When Judy arrived in Ecuador, common wisdom held that the only real threat from oil development came from speculators and colonists following oil company roads to occupy tribal lands. Judy Kimerling has shown the greater threat of contamination.

Day One: Boom Towns and National Parks

From Quito we took a $10 domestic flight northeast across the Andean cordillera, dropping into the Amazon basin at the oil boom town of Lago Agrio, twenty kilometers south of the Colombian border. There, the American oil company, Conoco, treated us to a 250-kilometer helicopter ride southeast across the Ecuadorian Amazon. We had asked to see Conoco's controversial concessions in the Yasuni National Park.

Although Texaco and its local partner, Petroecuador, have led oil development in the Ecuadorian Amazon, a number of other American and foreign oil companies continue to develop Amazon concessions. These include Conoco, Occidental Petroleum, and Clyde Petroleum, a British-owned oil company. The U.S. is the largest importer of Ecuadorian oil.

The Yasuni National Park and Conoco's concession overlap tribal lands of the Huaorani Indians. The Huaorani are traditionally antagonistic toward cowode (outsiders), and have killed several oil workers and at least two missionaries hired by the companies to make indigenous territories hospitable to oil development.

Conoco has pledged to use state-of-the-art technology to keep the Yasuni National Park and the Huaorani lands free of contamination. "We will not do what Petroecuador and City Investing have done to the Cuyabeno Wildlife Reserve," said Conoco's Ecuadorian director of environmental protection as we approached the Cuyabeno Reserve.

Below us I was surprised to see an open production pit near a drilling platform within the reserve. The pit was unlined and otherwise exposed to the environment. Its brimming surface of gleaming crude oil reflected the orange glow of the gas flare, and an adjacent stream wore an evanescent petroleum sheen. I pointed to the open pit and shouted over the engine noise, "They'd go to jail for that in New York." "This isn't New York," Judy shouted back.

Oil is enormously toxic. A gallon of it will kill fish in a million gallons of water and harm aquatic life at concentrations as low as one part per hundred billion. Minute quantities of its constituents (benzene, toluene, xylene, and polyaromatic hydrocarbons) cause cancer in humans and animals. In the United States, a variety of federal and state civil and criminal statutes govern its production, use, storage, and disposal. In order to comply with federal laws, U.S. oil producers commonly reinject production wastes into the original formation or into nearby dry wells. Producers face substantial fines for even small accidental releases to the environment. In Ecuador, these same companies simply dump their wastes into local creeks or "production pits," which are unlined and unstable holes dug in the ground or on the side of the earthen drill platform.

In addition to large quantities of crude oil and petroleum in emulsion, production pits contain a witches brew of toxic chemicals: scalding hot formation water containing sulfates, bicarbonates, hydrogen sulfide, heavy metals such as arsenic, cadmium, cyanide, lead, and mercury, and lethal concentrations of chloride salt. They contain poisonous drilling muds and clay spoils, industrial solvents, strong acids, diesel and aviation fuels, biocides, fungicides, flocculants, corrosion inhibitors, foam retardants, and descalers.

In the Ecuadorian Amazon, all these wastes enter the environment. Each pit has an overflow pipe to a nearby body of water. The toxic soups also percolate through soils into groundwater or flood into lakes or streams when the pits collapse. The only treatment occurs when the oil companies burn the pits to reduce their petroleum content.

As we flew above Cuyabeno, the jungle below was broken by landscapes reminiscent of war. Through the breaks everywhere in the canopy we saw spots like the tar pits of La Brea, where discharges from production pits blackened the earth. The pits spewed poison through effluent pipes into the streams tributary to the Rio Aguarico. Acres of red dirt, now blackened, surrounded an oil derrick and the hulking storage tanks of Petroecuador. Across the scarred and oil-drenched earth, corrugated workers' barracks stood incongruously against the palms, plantains, ficus, kapok, and strangler figs.

Past the petroleum camp, a large river, recently burned, still ran black, its banks charred and devoid of vegetation. Oil wastes streamed from the broken berm of a nearby production pit. On the horizon, dense plumes of inky smoke rose from burning production pits and gas flares linked by dirt roads stained with oil, sprayed to subdue the dust. Along these roads (still within the reserve), colonists' homes of cane and thatch stood amidst fields of coffee, plantains, and fallen trees. The older farms

Most colonists, like these, are poor campesinos who migrate to the Oriente in the hope that hard work will lead to better lives for them and their children.

were barren deserts of unprotected red clay, leached of nutrients and pounded into concrete by the driving rains. The hillside farms were crisscrossed by the cappilleria and chasmic ventricles of erosion.

Then we flew over the flooded forest near Lake Cuyabeno. Indian villages perched on stilts on promontories jutting from the submerged forest floor. A giant striated heron, shining white in the sunlight, rose below us amidst brilliant flocks of blue and yellow macaws, scarlet macaws, and green Amazons. Flowering epiphytes spangled the canopy with purple, red, and orange. Below all of this, we could see the tarred underbrush and floating scum still remaining from an eight-month old Petroecuador spill.

As we turned south, the Cuyabeno's aborted landscape receded and we found ourselves over the rolling hills and tight canopy of Yasuni National Park. Here the primal rain forest was uninterrupted except for the curtains of rain spilling from distant clouds. Through a small chablis in the canopy, I saw the forest understory deep below and wondered about the Huaorani and their isolation, and how they find their way around that vastness with no sun or stars to guide them. As we banked north for our return to Lago Agrio, we passed over Conoco's proposed base camp on a clearcut hilltop, a barren island in a productive sea, waiting for the road that will inundate this land with civilization.

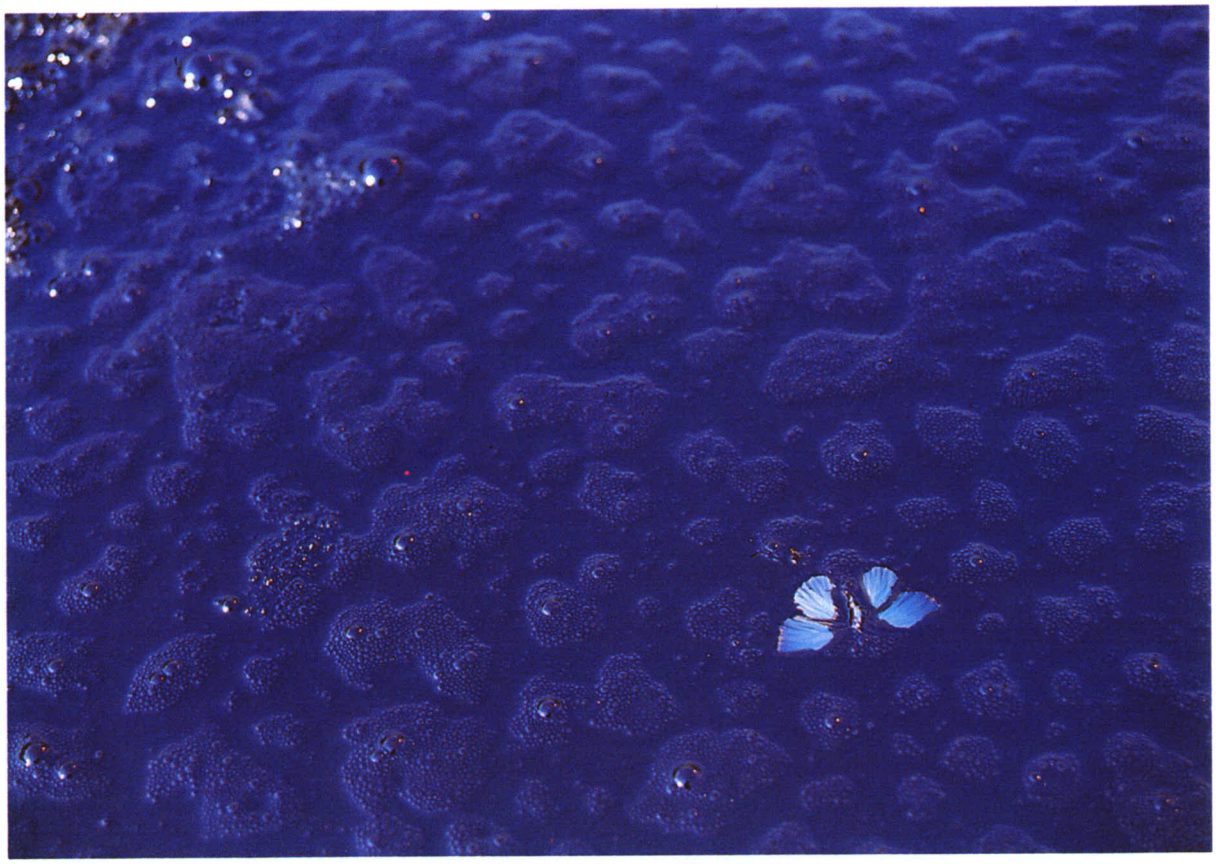
That night, in the community health center in Lago Agrio, we met with the center's chief clinician, and with representatives of fourteen communities accounting for about 40,000 people from the Aguarico River basin. Each of them told the same story. Sick and deformed children, adults and children affected with skin rashes, headaches, dysentery and respiratory ailments, cattle dead with their stomachs rotted out, crops destroyed, animals gone from the forest and fish from the rivers and streams.

"We have studies from a nearby area without oil and there is not a single case of malnutrition," said the doctor. "Today, we have 70 percent malnutrition in children six to twelve and 98 percent in the most contaminated areas. Because there are no animals left to hunt and no fish left in the streams, the major sources of protein have disappeared. The children have anemia. All during the dry season, they come in here with pus streaming from their eyes and rashes covering their bodies from bathing in the water. The parasitism rate for this area is now 98 percent."

A campesina woman from the Aguarico area spoke in a subdued voice. "When they burn their pits," she said, "smoke falls in pieces from the sky, then we have black rains and the particles drop on our crops and animals and into the lake where we get our water. In October of 1989, ash rained on all of us from Texaco's central facility in Lago Agrio and the children got skin problems. But usually they don't bother to burn and they just let the petroleum flow into the creeks. Everything here stinks of the chemicals that they put in their pits."

A colonist leader from Lago Agrio said, "We realize that we live in a very rich zone, but our people live in poverty and misery. Texaco will give us shirts with their emblem, but they won't spend a

The rain forest contains a dazzling variety of plant and animal species.



Butterfly that was attracted to a waste pit.

sucre to prevent contamination or to protect our health. Those petroleum companies poison our lands, kill our livestock and domestic fowl and contaminate our sources of water. Little by little they are leading us to a death that is certain!"

Day Two: The Cuyabeno Reserve

We traveled to Cuyabeno the next day to see the results of the Petroecuador spill from ground level. A rusty twelve-inch pipe draped with termite nests followed the dirt road from Lago Agrio to the Cuyabeno Reserve. We stopped in Pacayacu, a village where the central square is a drilling platform. Crude oil from the wellhead pooled around a plank shack upon which a tame green Amazon perched. A three-year old child about the size of my daughter, chasing her brothers, fell face down in a puddle of petroleum and water, soiling her hair and clothing. Nearby, two black pits reflected the wild flames and dense smoke of a gas flare; the lower pit was once a wetland that fed a small stream.

A macabre carpet of dead insects—beautiful cicadas with leaflike wings, three-inch stag beetles, and giant moths—encircled the stack's base. A small stream wended around the berm. Formerly the village bath and fishing hole, it was now a toxic moat. Stirring the sediments with a stick, I sent up gobs of petroleum and a dazzling sheen that doused the surface from bank to bank. On the opposite side, a blackened plume drew our eyes to a slurry of toxic wastes flowing obscenely from the pit's effluent pipe.

Inside Cuyabeno we found a boom town; a two-story barrack for petroleum works anchored the settlement. Secondary pipelines and colonists' houses made of cane or rough-cut lumber with straw or corrugated roofs lined the dirt petroleum roads; each was surrounded by felled trees and small cattle holdings or by fifty-hectare coffee plantations. "We asked the military to help us keep the colonists out, but they didn't come," said Gonzalo Moza, one of the reserve's four wardens. He added without irony, "It's against the law for the settlers to come into the reserve, but now it's not really against the law anymore because it's already done." Flames from the natural gas vents and steam rising from scalding production pits marked petrol-soaked drill platforms built near the road. A burning production pit billowed smoke that blackened the sky.

As we drove, we saw a wetland stretching north along the road and west to the distant jungle. A six-month old petroleum slick stained the surface with the colored confusion of a Jackson Pollack painting. Parakeets, yellow kiscadees, black anis, and a lone kingfisher perched in the leafless skeletons of rain forest giants. I wondered, though, where were the gallinules, the grebes, the bitterns, herons, and jacanas, the ducks and the other wading and diving birds that should be dipping and fishing here?

Within the reserve, at the tiny village of Tarapoa, we bought a chicken and hired a motorized dugout for the two-and-a-half hour trip up the Cuyabeno River to the lakes. We ducked our heads to pass under the dangling prop roots and lianas and the fluted trunks of ancient hardwoods, cloaked in mosses and creepers and spangled with epiphytes, bromeliads, and orchids. Roused by our presence, a troop of red howler monkeys threatened as they loped through the jungle above us. Where the river

Siona leader and children in the lakes region of Cuyabeno, where oil from a major spill was collected by hand, placed in these plastic bags, and buried in shallow unlined holes. From here they will recontaminate the lakes.

widened, steaming equatorial sunlight poured through the broken canopy, instantly raising the temperature and exploding the air with the colorful cloud of scores of butterfly species.

The Siona Indian motorista slowed the dugout and removed his hat to snatch at an undulating blue morph bouncing jauntily over and around the canoe, keeping pace but always just beyond harm's way. When we finally stopped the engine at a small forested island, the bird sounds were nearly deafening. A dozen different species of macaw and parrot flew in flocks and pairs above us. Giant branches ended with the weight of a hundred birds. The colors are indescribable. This was the campsite of the biologist Eduardo Asanza. He and his wife, Anita Sosa, an ornithologist, live here with a group of Sionas and their cacique (chief) and shaman, Victoriano Criollo.

"These lakes are characterized by the highest diversity but low productivity," said Asanza, who has tagged over 1,000 caymans in Cuyabeno Lake over the past twelve years. In addition to four cayman species, the lake and its drainage support endangered Amazon manatees and freshwater dolphins, ten monkey species, eighteen species of parrots, macaws, and parakeets, 180 species of reptiles and amphibians, 460 fish species, 18,000 plant species, and over 100,000 insect species. Although there are many species, there are only a few representatives of each. Species are therefore extremely vulnerable to disturbance.

In November 1989, Petroecuador spilled an undisclosed amount of petroleum from a collapsed pit into the upper lakes. This was the sixth spill in these lakes since 1984. "We saw fish and kingfishers dead in the water and caymans covered with oil," said Asanza, "completely black and unable to open their eyes. Even today, the diatom diversity is lower, productivity is lower, aquatic grasses have been killed, and we have accumulation of oil in the sediments in certain areas."

Day Three: Cuyabeno Lakes and the Black Lagoons of Shuara
Following a night of watching cayman, Asanza and the Siona cacique, Victoriano, accompanied us in the dugout to the upper lakes. We traveled through a narrow break in the canopy of the flooded forest forty feet above the submerged stream bed of the Auca Quebrada, moving slowly in the close corridors, flanked by the crowns of spiny bactris palms and mimosa, some of them veiled by the giant webs of social spiders. The motorista laughed gleefully as a startled squirrel monkey leapt into our canoe, almost falling in the water. We saw wooly and spider monkeys. Above us oatzin birds with ruminant stomachs and a cowlike stench rebuked us as they slid past on graceless wings. Striated herons posed breathlessly in the upper branches of submerged trees. Impossible numbers of parrots and macaws filled the branches and sky.

The motorista pointed to the blackened leaves and tarred trunks of the understory. "Crudo!" he said. Without emotion Asanza added, "This type of vegetation will die." As we moved northward a thin skin of oil coated the entire surface.

We turned off the trail into deep, pathless forest and broke into a clearing of braspolum grass at the edge of a large lake called the Auca cocha. "This and the Cocadrillo cocha were most affected by

Abandoned pit at an exploratory well in the Quichua community of Huataracu.Wastes from the pit have overflowed into the forest and continue to seep into the ground.

the spill," says Asanza. We pulled ashore at a small island where a palm frond lean-to shaded the cane sleeping platforms of the Siona Indians hired by Petroecuador to clean its spill. A few feet from the shoreline bloated plastic bags and thick crude oil filled an open pit. The pit was unlined, so I knew that the oil would eventually make its way back into the lake.

Victoriano's dark eyes stared into the pit. His large mouth and chiseled face were framed by graying hair, and a crown of hardwood legume. A traditional Siona cusma cloak covered his powerful build. He stood on the massive feet and splayed toes of a man who has not worn shoes in seventy-three years. He pointed to the pit and said quietly, "Once again they are making stupid things."

He gestured purposefully. "Before this was a good region," he said. "We had peace and didn't know anything of petroleum or contamination. Now gringos are coming and taking the oil. They are destroying our forests, they burn it and it falls on us and into our rivers when it rains. In some places all the animals are dead and the people and children are sick. I have seen the small fishes and aningas and ducks dead in the water."

He gestured again at the pit. "The settlers won't do this work because it is too dirty," he said. "They pay us very little for the cleaning and make us buy our own machetes and mosquito nets. We get sick from this work on our hands and skin and with sickness of the stomach. But they won't give us gloves or any protection or pills to make us better when we are sick, but only gasoline to wash our hands. They think, `who will know what we're doing?' Only the Indians."

Later that afternoon, we joined two Carmelite priests in the community of Shuara: Father Jesus Arroyo, the Church's tough, lanky human rights coordinator for the northern Oriente and Father Pablo Gallejo, a tall, energetic Spaniard with a booming voice, handlebar mustache, and a blue baseball cap. Father Gallejo's diocese, the vast petroleum fields of the Aguarico River watershed, is too poor for a church, but he knows every colonist by name and manages to crowd a number of them into his land cruiser that serves as worship house and public transportation for the region.

At a well called Shuara-5, six men mired in the gooey banks of a shimmering black lagoon, clothing and arms stained with oil. Some of them were shirtless and wore no gloves, their unprotected bodies tarred black. They cut the trunks of blackened trees and other vegetation and scooped up oil and contaminated sediments with shovels and their hands for burial in a series of open pits ten to fifteen yards from the lagoon. Two nearly naked men stood neck deep in oil in the center of the black pit. Periodically they dove under the oil in an effort to attach a hemp rope to a submerged tree stump. As they pulled the tree toward the shore their eyes gleamed white against the black ooze that coated their skin and hair. At the end of the day, the company hosed them down with gasoline to remove the crude oil.

Petroecuador pays them 60,000 sucres a month about $2 a day. "Too little," complained one of the workers as he emerged from the pit. He had held the job a little over a week. "When they are sick, the company fires them," Father Jesus explained.

Armando Naranjo, a sturdy, handsome campesino with an Omar Sharif smile, showed us his farm of yucca, plantains, and coffee near the well-site Shuara-1. After three years of work, he was expecting his first harvest of coffee beans when, he said, drunken engineers from Petroecuador cut a pipeline, discharging 300 barrels of petroleum onto his farm, killing all his crops. To drain the oil, they opened up a channel to a stream, killing his cattle as they were drinking.

"The stream was full of fish and the leaves were green," he said, "but they lit the stream on fire and burned everything. They refused me compensation because they say this is Indian land and I have no rights here." After the spill, the Petroecuador engineers laid a pipeline to bring safe water to their own encampment from an uncontaminated source a mile's distance. Armando and other campesinos drink rainwater during the summer, but in the dry season have to drink from contaminated streams.

"All the streams are bad now," said Father Gallejo as we stood in the eerie light of a vent flame near the vast production pit at Tetete-9. "There are a few small streams where they can still get water during heavy rains. But when it is dry they must use the big streams, and all the big streams are contaminated. None of the water is good."

On a bridge spanning a contaminated stream near the schoolhouse at Ciudad Chone, we ran into another American, Charles Rackowitz, a tower pusher for Poole Oil Company of Houston, which operates a nearby drill site and reserve pit. He explained the practice of dumping production wastes into streams. "In the United States, they'll pump that stuff down a dry well. Here they don't have dry wells. There isn't any place in this country to put it. Back home, they'd fine you for this."

Day Four: The Volleyball Deal

Eighty kilometers to the south, in Coca, we met with Quichua dirigentes (leaders). The dirigentes complained that the oil companies had promised to help community development in return for destroying tribal lands. The companies signed contracts obligating them to build a communal house, school, or volleyball court, or to donate a generator. The dirigentes said the companies had violated these agreements almost without exception.

"Quichua are very respectful of the law and promises," said Kimerling, who had spent considerable time in Quichua communities. "Compliance with law and keeping promises is very important to them." The dirigentes listened carefully as she recited the Ecuadorian constitutional provisions guaranteeing "an environment free of contamination."

Contamination was a new concept here. There is no word for contamination in the Quichua language, but the Quichua are catching on. A young Quichua dirigente pointed out that many of the animals are gone from the forest in the Napo River basin. "Our people find them dead near the pits deer, wild pigs, parrots, turkeys, and lizards. When we open them up, their stomachs and intestines are completely gone. This is because they come to eat the salt [from the production waters]. When the boas and alligators eat these sick animals, they also die."

Two dirigentes offered to take us down the Napo River to the Quichua community of Limoncocha to see Occidental Petroleum's new exploration site. The Napo is a giant Amazon headwater. Nine of us crowded into a small dugout that sat low in the lively, brown water, which washed always over one gunwale or the other. The motorista bailed continuously. The other dirigente, lean and handsome, wearing a yellow hard-hat and dark glasses, stood amidship, facing the bow, directing the motorista past shoals and snags with slight movements of his fingers and wrists. Sometimes he sat facing his wife, talking quietly and playing with his infant son.

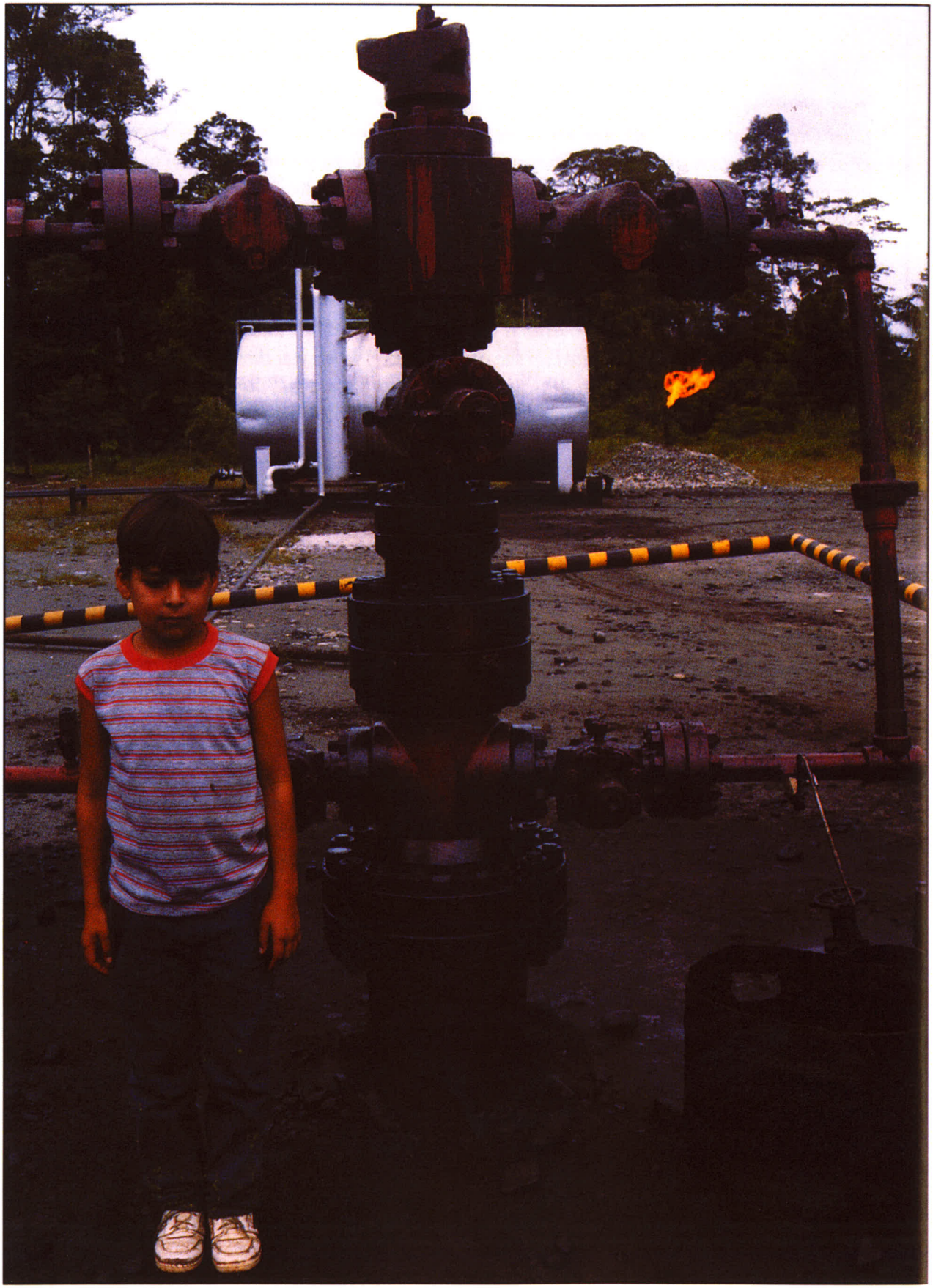
After several hours, we made the overland portage across mudflats and through jungle to the Rio Jivino. One of the dirigentes pointed up the river. "Before, when you threw a hook into the river," he said, "you would pull out a fish. Now you can fish many hours and maybe catch nothing." The bird sounds and our sense of isolation were suddenly drowned by the stench of diesel and the roar of heavy machinery. Miles from the nearest dirt road, a giant crane dredged the river bottom and shore. Work gangs with chain saws and planers stripped the jungle of lumber on both river banks. Earthmovers crashed and clanked as dumptrucks and bulldozers carried the drying sediment into the jungle to grade the new petroleum road.

Beneath the ancient rain forest we could see the carefully tended stands of cacao, yucca, coffee, and fruit, including pasu, lemon, orange, papaya, aguacate, and chunta duro nuts, and cedar and laurel for wood and palm for thatch. To the untrained eye, these rich farms seemed indistinguishable from the ordinary rain forest. But they were chakras, paradigms of sustainable agroforestry, each one the product of eons of tribal wisdom and decades of backbreaking work by Quichua women.

In sixteen days, Occidental Petroleum has cut nine kilometers of road and a five-acre drilling ramp from those farms with machinery shipped in on river barges. A Quichua woman watched the machinery from the cleared river bank that was once her farm. Her teenage daughter stood beside her with a blank face and a tiny marmoset clinging to her dress. "They destroyed our chakra and our house and mined away the banks of the river which was ours," she said. "They paid us nothing."

The community has asked Occidental to build them a volleyball court in exchange for the damage. "Limoncocha thinks Occidental will keep its promise; I know they will not," says a Quichua man quietly. I asked him if the community couldn't have driven a better bargain. "They have fear of the army," he said. "When we ask for better things the army comes and calls us `subversivos.' They say, "Who has told you to say these things? Why don't you let this company drill?"

We followed the new road through the broken remains of Quichua orchards. Before us in the twilight, a shiny geotextile skin stretched through the jungle. Beside it a giant canopy tree with a remarkable girth and spreading crown draped in ephiphytes stood 150 feet in defiance among the crushed groves of yucca and plantains. As we passed we saw that its roots and buttresses were neatly cut. Thousands of trees cut to stabilize the road lay side by side for kilometers along its shiny skin. "They pay 300 sucres (thirty cents) for each tree cut," the man said.



In Pacayacu, there is an oil well in the center of town.

A swarthy obrero (oil worker) from the Andes, sweating from his labor, paused to stare at us through hooded eyes. His stocky frame was half cloaked in a soiled T-shirt sporting a skull on a cactus and the sentiment, "Bury me in Redneck country." Stocky men from the Sierras labored beside tall, muscular blacks from the coastal refinery province of Esmeraldas, stacking or cutting lumber and pegging and stretching the skin, all in a pandemonium to stay ahead of the bulldozers and trucks that pack the roadway in river sediment. "They are strange," said one of the Quichua who lost his family farm. "They work until six or seven at night, sometimes without lunch."

As the stars rose, we reached the drill site. Moonlight reflected from five acres of geotextile spread over the jungle clearing. On the north side, caterpillars with headlights pushed up earthen walls around a half-acre pit atop the stream where some Limoncocha families bathed and drew their water. The operation's supervisor, a grizzled Argentine named Billy Potoby, answered our questions in a thick Louisiana drawl: "In the United States, the pits are much smaller and they are lined. I'm not going to line this one; that's not what I'm being paid for." Wastes will be dumped into bathing streams and then into the Rio Jivino. I wondered if the Quichua know the price they are paying for their volleyball court.

A few hours later, we sat in a cane hut, lit by primitive lanterns, with a young Quichua and his mother. The young man was clean-cut and handsome, with an open face. Educated, he is the schoolteacher in a nearby community. "We asked them to pay us rent for the land, but they said, `We will do it if we find oil," he said. Occidental paid the family a few sucres for a single year's crop of coffee.

His mother stood up to speak in broken and heavily accented Spanish. "They didn't pay for the wood they cut down in my chakra or the food crops. The military came to us and asked why we were making trouble and why we wanted so much money, and who had been around here talking to us and who could have been teaching us such things." Five feet tall with a kind, round face, her hair pulled back in braids, I thought of her years of backbreaking labor in the stifling heat. "Everything is lost now," she said. Tears rolled down her cheeks. "It was my chakra. I worked it for many years."

We burned the lanterns late into the night. A dirigente spoke earnestly to the young teacher in Quichua. Occasionally, we recognized a Spanish phrase, "el Banco Mundial" or "contaminacion." The dirigente turned to us and asked in Spanish, "What part of the World Bank money comes from Americans? From the Japanese?"

As they continued, I considered how remarkable it was that here, in a cane hut in the middle of the Amazon rain forest miles and miles from the nearest road, we sat in near darkness and listened to two indigenous jungle people debating international financial policy in their native tongue. I reflected that the only way the Amazon will be saved is if the people who live there choose to save it, and then only if they can muster the political power to impose that choice. This will require a rapid growth in their level of political sophistication. That night in Limoncocha I felt we were

report. She played a key role as an editor of the manuscript and showed real creativity in her role as organizer of the production process. Susan spent hours with Judy selecting the report's photos from over a thousand of Judy's slides.

Amazon Crude has harnessed the talents and energies of many people who share the belief that their own individual efforts can help to protect the people and the forests of the Oriente. We end this study with some suggestions about what you can do. We welcome your comments on *Amazon Crude* and your participation in our work.

Finally, I wish to express our deep appreciation to the Conservation, Food and Health Foundation which was the first to recognize the potential importance of Judy's work in Ecuador and to provide a critical specific grant at an early stage of this project. Equally important to NRDC is the support for our work on tropical forests in Ecuador and elsewhere from the Wallace Genetic Foundation , the Ruth Mott Fund, and the Strauss Foundation.

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