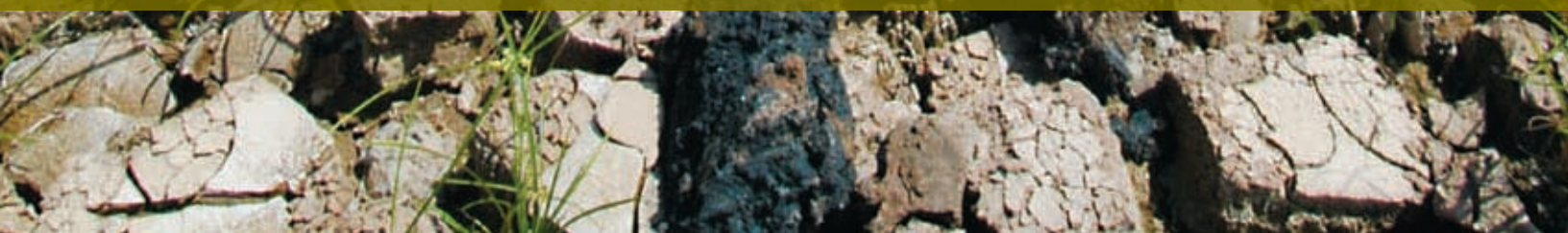
# A LEGACY OF HARM

## Occidental Petroleum in Indigenous Territory in the Peruvian Amazon

EarthRights International
Racimos de Ungurahui
Amazon Watch



EarthRights International • Racimos de Ungurahui • Amazon Watch

# A LEGACY OF HARM

## Occidental Petroleum in Indigenous Territory in the Peruvian Amazon

"[Oxy] said there wasn't anything wrong, that the river and the animals and fish were fine. . . . Oxy . . . didn't warn us about anything, and this was when Oxy was contaminating our area. . . . Oxy said, 'we're just extracting petroleum, we're not contaminating.' And so we got no support from Oxy . . . How am I going to survive? Where am I going to hunt? I want help. How am I going to raise my children?"

– Man from Antioquía, May 2006

# ABOUT THE AUTHORS

**EarthRights International (ERI)** is a nonprofit, nongovernmental organization that combines the power of law and the power of people in defense of human rights and the environment. We focus our work at the intersection of human rights and the environment, which we define as earth rights. We specialize in fact-finding, legal actions against perpetrators of earth rights abuses, training for grassroots and community leaders, and advocacy campaigns. Through these strategies, ERI seeks to end earth rights abuses and promote and protect earth rights. ERI has offices in Thailand and Washington, DC.

**Racimos de Ungurahui** is a nonprofit, nongovernmental organization based in Lima, Peru that was founded in 1995 with the mission to contribute to the strengthening and development of the human rights of indigenous Amazonian peoples. Racimos works with the social movement representing the indigenous Amazonian peoples of Peru to strengthen the internal capacity and external capacity of these communities within the context of their multiethnic and multicultural society. With a multidisciplinary team of professionals, Racimos provides experience and knowledge to assist the indigenous peoples in recuperating and effectively exercising their territorial, social, economic, political, and economic rights.

**Amazon Watch** is a nonprofit, nongovernmental organization that works with indigenous and environmental partner organizations in the Amazon Basin to defend the environment and advance indigenous peoples' rights in the face of large-scale industrial development projects such as oil and gas pipelines, power lines, roads, and other mega-projects. We work closely with indigenous Amazonians to protect their territories and amplify their voices in the global North. Amazon Watch has offices in California and Washington, DC.

# ACKNOWLEDGEMENTS

We would like to express our profound appreciation to the native communities of the Corrientes River region: Nueva Jerusalén, José Olaya, Pampa Hermosa, Saukí, and Antioquía/Jíbaro, and the leaders of their representative organization, the Federation of Native Communities of the Corrientes River (FECONACO), for asking us to take a multidisciplinary mission to the region in May 2006 to investigate with them Occidental Petroleum's harmful legacy in this part of the Peruvian Amazon.

We want to extend our thanks to the *Apus* (traditional community leaders), women, and men of the communities, who gave unstintingly of their time and memories, as they spoke to us about how their lives and lands have been so powerfully impacted by petroleum extraction activities and led us safely and diligently to the contaminated areas. Their stories were painful for us to hear, and yet undoubtedly harder for the Achuar to express. We are indebted to them for their honesty, their fighting spirit, and most of all, their courage in the face of seemingly overwhelming odds. We extend our solidarity to them in their ongoing struggles for environmental justice in the Peruvian Amazon.

We are grateful to the community members for their assistance in serving as interpreters, opening their homes to us, helping with the mission's transport needs, and warmly welcoming us into their communities.

EarthRights International, Racimos de Ungurahui, and Amazon Watch wish to thank Andrés Sandi Mucushua, president of FECONACO, for his unstinting generosity with his time, knowledge, and careful analysis of profoundly complex political, social, and environmental issues. Additionally, we would like to thank the former vice-president of FECONACO, Gonzalo Paima Carijano, who served as the inspired leader of our mission. A special thanks to Fidencio Sinti Mapuche, Henderson Rengifo Hualinga, and Petronila Nakaim Chumpi Rosales of FECONACO who provided significant logistical and planning support before and during the mission.

We extend our appreciation to Kenny Bruno, who assembled the mission participants and conceptualized the idea for the mission from the outset.

ERI is grateful to the As You Sow Foundation, whose support helped make this mission and report possible.

### Report Editors

Emily S. Goldman • *EarthRights International*
Lily La Torre López • *Racimos de Ungurahui*
María Lya Ramos • *Amazon Watch*

# TABLE OF

# CONTENTS

# ACRONYMS

**AIDESEP**
Inter-Ethnic Association for the Development of the Peruvian Jungle (*Asociación Inter-étnica de Desarrollo de la Selva Peruana*)

**API**
American Petroleum Institute

**CDC**
United States Centers for Disease Control

**DIGESA**
Peruvian government's General Directorate for Environmental Health (*Dirección General de Salud Ambiental*)

**EIA**
environmental impact assessment

**EPA**
United States Environmental Protection Agency

**ERI**
EarthRights International

**E&P**
exploration and production

**FECONACO**
Federation of Native Communities of the Corrientes River (*Federación de Comunidades Nativas del Río Corrientes*)

**FPIC**
free, prior, and informed consent

**IACHR**
Inter-American Commission on Human Rights

**ICCPR**
International Covenant on Civil and Political Rights

**ICESCR**
International Covenant on Economic, Social, and Cultural Rights

**IIAP**
Institute for Research on the Peruvian Amazon (*Instituto de Investigaciones de la Amazonía Peruana*)

**ILO**
International Labor Organization

**INRENA**
National Institute of Natural Resources (*Instituto Nacional de Recursos Naturales*)

**ONERN**
National Office of Natural Resource Evaluation (*Oficina Nacional de Evaluación de Recursos Naturales*)

**Oxy**
Occidental Petroleum Company

**PAH**
polycyclic aromatic hydrocarbons

**PCC**
Peruvian Criminal Code

**TDS**
total dissolved solids

**TPH**
total petroleum hydrocarbons

**UDHR**
Universal Declaration of Human Rights

**WHO**
World Health Organization

# PREFACE
## *The Corrientes Mission*

Photo: Nathalie Weemaels

*An Achuar woman listens with concern during an assembly of Corrientes River basin communities in March 2006 on the environmental and health harms that have resulted from Oxy's 30-year presence in their territory.*

In March 2006, the Federation of Native Communities of the Corrientes River (FECONACO) asked EarthRights International (ERI) to undertake a mission to the Corrientes River basin in the northeastern Peruvian Amazon to investigate the social, environmental, and human rights impacts of more than 30 years of petroleum production activities. This request was specifically in response to a decision taken by an assembly of indigenous Achuar communities in the Peruvian Amazon affected by petroleum operations. From May 14-23, 2006, a multinational, multidisciplinary team comprised of a doctor and nurse who specialize in community medicine, an agronomist, an environmental engineer, a chemist, one Peruvian and two U.S. attorneys, and two interviewer-interpreters visited the Corrientes River basin. (See Appendix A for participant descriptions). Collaborating with ERI on the mission were Peru-based Racimos de Ungurahui and US-based Amazon Watch.

The investigative mission visited five Achuar communities – Nueva Jerusalén, José Olaya, Antioquía/Jíbaro, Pampa Hermosa, and Saukí – in and downriver from an oil concession known as "Block 1AB," where U.S.-based Occidental Petroleum Corporation operated for 30 years. The team met with a community assembly in each community, interviewed over 60 individuals about the oil operations and, with the consent of the participating community members, took medical histories and diagnostic medical examinations, including field testing for lead concentrations in the blood. Members of the team also analyzed water and sediment samples and inspected several former and current areas of oil production.

The following report presents the findings of this investigative mission. The names of interviewees and individuals whose blood was tested have been withheld so as to protect their privacy and ensure their safety from possible reprisals. They are, however, identified by their gender, community, and where available, their approximate age.

# EXECUTIVE SUMMARY

Over the course of 30 years of operations in indigenous Achuar territory in the Peruvian Amazon, Los Angeles-based Occidental Petroleum Corporation (Oxy) knowingly engaged in destructive practices which severely contaminated unique and sensitive ecosystems and caused profound impacts upon the rights and health of the communities living there. Under the company's successor, Pluspetrol, the patterns of human rights and environmental abuse established by Oxy continue unabated. Today, the Achuar communities live with Oxy's legacy of harm, which consists of extreme pollution of their lands and waterways, disruption of their ability to fish, hunt, and raise crops, and persistent health problems, including widespread lead and cadmium poisoning.

The northeastern Peruvian Amazon has been home to the indigenous Achuar people for thousands of years. The forests and rivers have provided the Achuar with all of their subsistence needs, as well as occupying a central role in their traditional belief systems and cosmology. This intensely symbiotic relationship was premised on the Achuar's deep respect for their physical environment and ancestral lands, and produced an environmentally sustainable lifestyle that was the norm for generations.

The Achuar world was dramatically changed in 1971 when Oxy signed a contract with the Peruvian government to drill for oil in Achuar territory, after initial testing had demonstrated the existence of significant reserves. Oxy began exploring and extracting petroleum from the Corrientes River basin in a remote region designated "Block 1AB" that had long been inhabited by the Achuar people. Large-scale production began in 1975, making it Peru's largest onshore oil field complex, eventually producing approximately 42 percent of Peru's oil. During its 30-year presence in the Corrientes region, Oxy built massive supporting infrastructure, such as airports, heliports, and refineries and at its peak produced approximately 115,000 barrels of crude oil per day.[1]

Even with the best-known precautions and modern technology, oil exploration and production involves significant risks to human health and the environment. But Oxy's activities fell far short of the accepted industry standards throughout the course of their operations, as the company discharged massive quantities of contaminated waters into local streams, stored wastes improperly, and caused periodic oil spills. Three decades of Oxy's activities caused significant health and environmental harms suffered by the Achuar people and their once-pristine rainforest environment.

In 2000, Oxy sold its concession to Pluspetrol, an Argentine corporation that continues to use the systems and infrastructure Oxy designed and put in place. While the company at the helm of Block 1AB might be different, its modus operandi remains the same. Oxy's destructive patterns, and the resulting human rights and environmental harms, have continued on Pluspetrol's watch.

Based on our investigations in the Corrientes River basin, testimonies of individuals with first-hand experience, Peruvian government reports, and historical, anthropological, and scientific publications, this report presents the following findings on Oxy's history in Block 1AB, the current state of contamination in the Corrientes River basin, and its impacts on the five Achuar communities most directly affected:

- Oxy knowingly employed out-of-date practices in the Corrientes River basin and used methods long outlawed in the U.S. and in violation of Peruvian law, and continued those practices for 30 years in Peru. In violation of Peruvian law, Oxy dumped an average of 850,000 barrels *per day* of toxic oil by-products from the extraction process, known as "produced waters," directly into rivers and streams used by the Achuar for drinking, bathing, washing, and fishing, totaling approximately *9 billion barrels over 30 years of operation*. The discharge of produced

waters, which are highly saline and chemically distinct from the uncontaminated streams and rivers, alters the chemistry of the waters and renders the water non-potable.

- Oxy used earthen pits to store drilling fluids, crude oil, and crude by-products. These pits, dug directly into the ground, were open, unlined, and without protective barriers; they routinely overflowed onto the ground and into surface waters and leached into the surrounding soil and groundwater.
- Substantial proportions of the children in all five of the Achuar communities at issue display high concentrations of lead in their blood, at levels that are known to cause developmental problems. Contamination from oil production is the only likely source of this lead poisoning. Similarly, children and adults in at least two of the communities were found to have dangerously high levels of cadmium in their blood.
- Oil contamination caused by accidental spills and the routine dumping of produced waters over a period of 30 years has resulted in the contamination and subsequent decline in fish and game populations and agricultural productivity for the communities who inhabit Block 1AB. Today the Achuar have to travel greater distances, only to return home with far less and lower quality food than they once caught or fished. Farms are less productive, and the areas available for cultivation have been significantly reduced.
- Pluspetrol has continued to use Oxy's substandard infrastructure and production methods in Block 1AB since it bought the concession in 2000 – even though these have been shown to clearly violate Peruvian law and international human rights norms. Recently, Pluspetrol agreed to change its practices, although this agreement has not yet been implemented.
- Oxy's harmful practices have violated rights guaranteed to the Achuar people under international law, including the rights to life, health, and a healthy environment, and their rights as indigenous peoples to participate in development decisions affecting their lives and territory. Oxy's practices also violated Peruvian law, which incorporates these rights as well as specific environmental protections. Finally, because Oxy is a U.S. corporation, Oxy's disregard for the law and well-being of the Achuar could subject it to legal liability in the U.S. as well as in Peru.
- In 1984 the Peruvian government's National Office of Natural Resource Evaluation declared Block 1AB to be "the country's most damaged environmental region."

In light of these findings, EarthRights International, Racimos de Ungurahui, and Amazon Watch urge Occidental Petroleum Corporation to immediately begin efforts to clean up its contamination in the Corrientes River basin, work with Pluspetrol to stop the ongoing contamination, and compensate the affected communities. The Peruvian government should also ensure that its own environmental and indigenous rights laws are enforced in the Corrientes River basin as well as throughout the Amazon, and, together with Oxy and Pluspetrol, provide healthcare to the affected communities to address cadmium and lead poisoning and other problems.


COLOMBIA
ECUADOR
Corrientes River
Basin Region
Iquitos
BRAZIL
LIMA
BOLIVIA
PACIFIC OCEAN
CHILE

# PART I
# *The Achuar People and Occidental Petroleum*

## 1 • Overview

The Achuar indigenous people have inhabited the northeastern Peruvian Amazon for thousands of years, living in a symbiotic relationship with their territory, dependent on the natural resource base for their survival and livelihood. Their traditional way of life changed suddenly in 1971 with the arrival of Los Angeles-based Occidental Petroleum Corporation (Oxy) into their territory and the start of what would become a 30-year presence as the company explored and drilled for petroleum. The building of heavy infrastructure, undertaking of seismic activity, rapid influx of company employees, widespread deforestation, and dumping of production wastes directly into the environment made rapid and permanent changes in the Achuar people's health and the integrity of their ecosystem.

## 2 • The Achuar People of Peru

### An indigenous people with a long history in the Amazon

The Achuar people have lived in the Amazon for thousands of years, in what is now eastern Ecuador and northeastern Peru. In colonial times, contact with the Spanish brought disease, forced migration, and inter-ethnic conflict that decimated the local indigenous populations. More recently, beginning in 1947, the Peruvian government began to provide incentives for *mestizos* (persons of mixed indigenous and European ancestry) to colonize the Amazon through intensive agriculture, logging, and mineral exploitation. These projects resulted in extensive deforestation as roads, airports, and other infrastructure were constructed. Nonetheless, by the 1970s, the Achuar were one of the few groups that remained relatively unaffected by contact with the modern western world.[2]

There are approximately 12,500 Achuar in Peru, located in the department (state) of Loreto, organized into roughly 77 communities along the Morona, Pastaza, and Corrientes Rivers and their tributaries. Traditionally, it has been necessary for the Achuar of the Corrientes River basin to maintain an environmentally sustainable lifestyle, as their existence has depended directly on the natural environment. Today, their subsistence is still largely based on hunting, fishing, gathering, shifting cultivation, and raising fowl.[3] They are dependent on rivers for many of their needs, particularly for drinking, cooking, crop irrigation, washing, and transport.

Traditional Achuar subsistence is based on a gendered division of labor. The women are responsible for cultivation and are in charge of the family home-gardens, in which they grow manioc, medicinal plants, fruits, tobacco, and plants utilized for making clothing. They also grow staples (manioc, plantains, corn, taro, yams, beans, peanuts, and certain fruits) on plots of land in the lowlands, typically close to a river.[4] Sometimes the women will undertake additional temporary cultivation on hills or riverbanks. Once the soil is depleted after a number of years of cultivation, families traditionally relocate to more fertile lands, maintaining the old fields as long as needed until the new ones are fully productive.[5] Men are the hunters and fishermen, both activities being central to Achuar culture, cosmology, and subsistence.[6]

Achuar communities customarily have obtained medical care through local healers using rainforest plants for treatments and cures. Indigenous elders are deeply versed in the identification and preparation of plants used for a wide array of needs such as pain relief, contraception, cleansing, increasing stamina, making of dyes and mordants, and developing cures for common ailments.[7]

The Achuar remember their traditional way of life with fondness:

> *Before Oxy, it wasn't like this. This river was beautiful. The birds and other animals all lived very close. My grandparents lived here, and I grew up here as my father did. Before, it wasn't like this. This river was beautiful. There were animals along the riverbank that we hunted. Now there are no animals.*[8]

The Achuar people's dependence on the natural resource base, as well as their lack of access to money, results in a very limited participation in the country's cash economy.[9] According to Peru's census bureau, the National Information and Statistics Institute, the region's population lives well below the national poverty line of $64 per month[10] – despite the profitability and financial success the Peruvian government and international corporate interests have derived from the sale of petroleum found in and extracted from their lands.

## The five Achuar communities of the upper Corrientes River basin

This report focuses on five Achuar communities in the Corrientes River basin – José Olaya, Nueva Jerusalén, Antioquía/Jíbaro, Saukí, and Pampa Hermosa. They are located along the Corrientes River and its principle tributary, the Macusari River. These communities' populations are quite modest, comprising a total of approximately 1,500.[11] Three (José Olaya, Nueva Jerusalén, and Antioquía/Jíbaro) are located within and two (Saukí and Pampa Hermosa) immediately downstream of "Block 1AB," one of the Peruvian government-demarcated hydrocarbon concession areas formerly owned by Oxy, far from modern health services or other amenities. The five communities are extremely isolated. Except for helicopters and planes operated by the oil companies, the communities are only accessible by a two-to-three-day boat trip upriver from Iquitos, the capital of the department of Loreto and nearest commercial airport.

*"I've lived in Pampa Hermosa for 25 years. We lived here peacefully before the company came. There were many forest animals, but things have changed."*[12]

Photo: Nathalie Weemaels

*Traditional Achuar homes, made of wooden walls and straw roofs, on the banks of the Corrientes River.*

The upper reaches of the Corrientes and Macusari Rivers, home to José Olaya and Nueva Jerusalén, respectively, are only accessible by small boats or canoes. Travel between communities can take hours or even days by foot and canoe. Some of the communities are served by an internal system of dirt roads; however, access is limited given the roads are both owned and managed by the operating oil company.

Achuar communities are led by traditional leaders known as *Apus*. The community as a whole, in its periodic assemblies, decides major issues by consensus. All members are entitled to participate in the assembly. Similar to other Amazonian indigenous groups, in modern times the Achuar have organized into federations of communities at the local, regional, and national levels in order to better protect their natural resources, territories, human rights, and traditional cultures from outside appropriation and exploitation. In 1991, the Achuar communities of the Corrientes River (including the five communities highlighted herein) joined with Quechua and Urarina peoples to form FECONACO, the Federation of Native Communities of the Corrientes River (*Federación de Comunidades Nativas del Corrientes*). FECONACO focuses on developing unified positions and actions to defend the indigenous peoples and their territories, with particular attention to the oil operations in Block 1AB.[13]

"We live in a rich land and we can live from the land because it's rich, if we can stop the contamination." [19]

## The Achuar people's natural environment

The Achuar live in one of the most biodiverse regions in the world. With the second largest expanse of Amazon rainforest after Brazil, Peru is home to 84 of the 108 identified ecological zones in the world. The country boasts eight wetland areas totaling over 16 million acres (over six million hectares) that are internationally recognized for their global importance by the Ramsar Convention on Wetlands.[14] Peru has nearly 4,000 tree species; 3,140 plant species identified as having productive, medicinal, nutritional, or industrial use; and 155 domesticated plants. Downriver from Block 1AB, an area measuring nearly 10 million acres (four million hectares) forms part of the Abanico del Pastaza Wetlands Complex, a Ramsar site officially recognized in 2002 for its tremendous biodiversity and conservation value.[15] Covered by tropical rainforest, this area is home to a host of species of all kinds.[16] This diversity of species and biomes[17] merited the area's inclusion in the Amazon lowlands identified by the United Nations Environment Programme's World Conservation Monitoring Center as a priority for conservation of freshwater ecosystem biodiversity.[18]

The communities of the Corrientes basin in and around Block 1AB are in an area characterized by a network of rivers and streams separated by hills, in which soils are acidic, clayish, and of low fertility. At the lowest level, volcanic sands cover the riverbanks, making them, together with the alluvial plains, more suitable for agriculture than nearby hillsides. In normal conditions, forest vegetation is dense and healthy, with closely-spaced large trees boasting broad and leafy crowns. *Aguajales*, or permanently flooded swamps principally covered by palm trees,[20] provide the Achuar with an important source of fruit, which they gather from the myriad palms that grow in this ecological zone. These areas are also the favored habitat for tapirs, capybaras, and peccaries, which are found in large numbers.[21]

A man from Antioquía commented,

> *Before, we could just drink straight from the river – we could drink from any stream, but it's not like that now. Now it's a four- to five-hour walk to get fresh water. We knew something was wrong, because the animals and the fish had been large before the companies got here. But now the fish are . . . very skinny. And when we gut the fish, the petroleum floods out . . .* [22]

Photo: Nathalie Weemaels

*Community members participating in an Achuar assembly in March 2006 regarding Oxy's wrongdoing.*

Photo: María Lya Ramos

*Oxy-installed oil pipeline at José Olaya on the Corrientes River.*

## 3 • Occidental's Operations

### In the Corrientes River basin

In 1970, the Peruvian government divided Achuar territory into "blocks" for the exploration and production of petroleum.[23] In June 1971, Oxy signed a contract with the government to drill for oil in Block 1AB, an area that had been licensed for oil exploration and extraction despite long-standing indigenous territorial claims. In November 1972, the company made a significant oil discovery and considerably increased its seismic exploratory activities and opening of new oil wells. Large-scale production began in 1975, making it Peru's largest onshore oil field complex, eventually producing roughly 42 percent of Peru's oil. Oxy drilled approximately 230 wells in Block 1AB in an area of over 1.2 million acres (nearly half a million hectares) of pristine rainforest in the Corrientes River basin in the traditional lands of the Achuar, Quechua, and Urarina peoples.[24]

Oxy constructed a network of nearly 300 miles (483 km) of roads expressly for its own use, pipelines for the local transport of crude, and the massive Oleoducto Norperuano (North Peru Oil Pipeline), a 532-mile (856 km) pipeline carrying oil from the Amazon across the Andes to the Peruvian coast at a construction cost of nearly US$1 billion.[25] Facilities in Block 1AB include a collection station/central work camp in Andoas and nine production camps.[26]

Oxy also built supporting infrastructure, such as airports, heliports, and refineries. From 1971 until 2000, Oxy conducted oil operations in Block 1AB, *producing approximately 115,000 barrels of crude oil per day at the project's peak.*[27] The company became one of the biggest producers of crude oil in Peru.

In 2000, Oxy sold the Block 1AB concession to the Argentine oil company Pluspetrol, which today continues to use the substandard facilities designed and built by Oxy and operate in largely the same manner as Oxy did previously, continuing to add to the environmental and health harms that Oxy's activities initiated.

> *You have seen the total contamination of our river valley due to Occidental Petroleum. Oxy contaminated this area in earlier years, but then Pluspetrol came and continued contaminating. The contamination is in the air as well as the river; it's in the fish, what we live on, what we eat to survive.*

### Oxy's domination of indigenous peoples

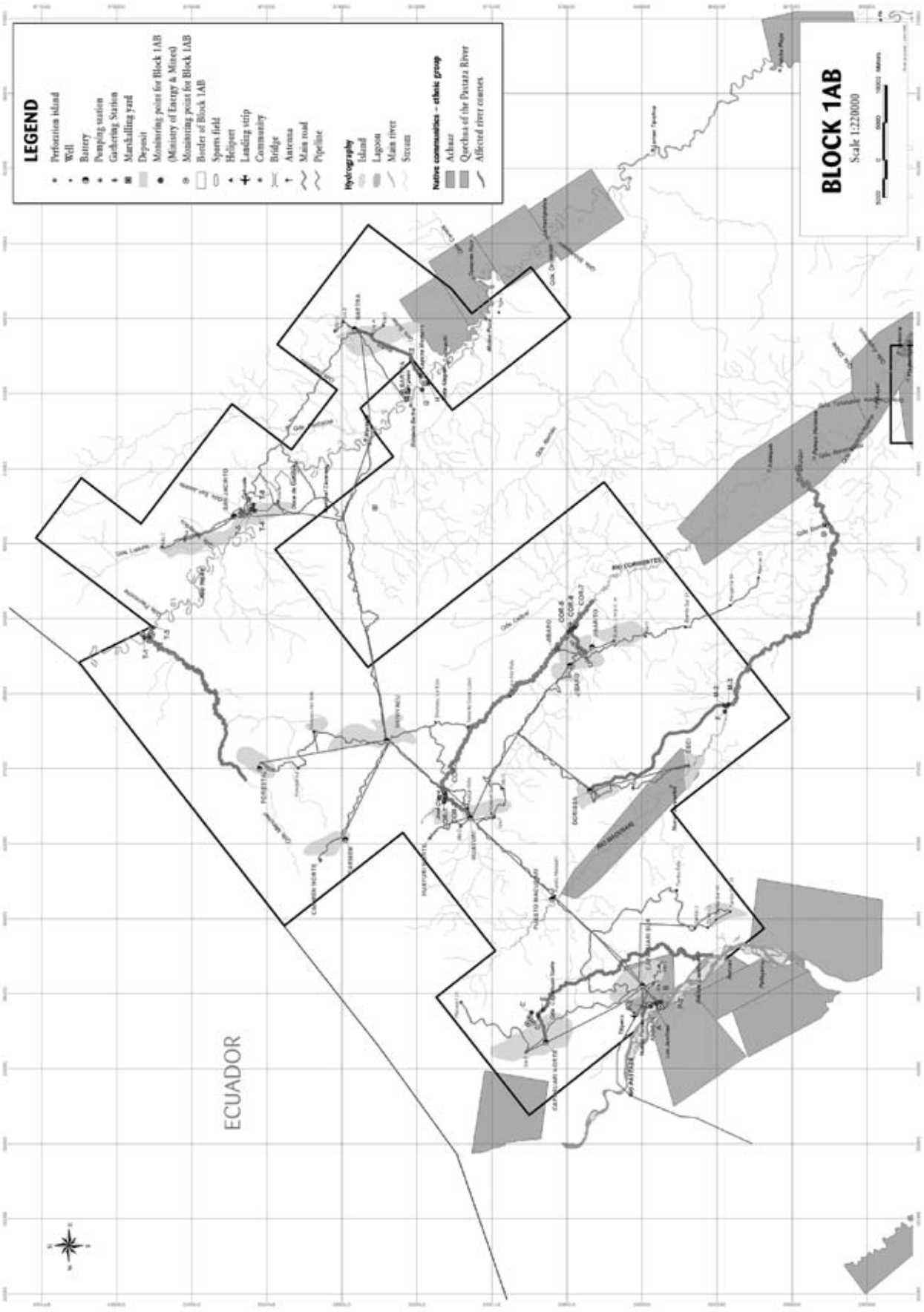
*During its 30 years in the Corrientes River basin, Oxy never sought nor gained Free, Prior, and Informed Consent (FPIC) for its work from the thousands of indigenous peoples who would be affected by the company's activities.* Oxy has pursued "divide-and-concquer" techniques to splinter communities in an effort to manufacture "consent" and thereby proceed with its operations with a veneer of presumed "respectability" for its operations.

Achuar community members reported that Oxy restricted their ability to travel within their traditional territory and did not allow them to approach company installations. Community members also state they had their cameras taken from them so as to prevent them from documenting the area where Oxy was performing its operations. [29]

### Oxy in Latin America: a pattern of irresponsible behavior

Oxy has caused extensive destruction of the environment and indigenous socio-cultural fabric in Peru and elsewhere in Latin America through

## Block 1AB


LEGEND
Perforation island
Well
Battery
Pumping station
Gathering Station
Marshalling yard
Deposit
Monitoring points for Block 1AB (Ministry of Energy & Mines)
Monitoring points for Block 1AB
Border of Block 1AB
Sports field
Heliport
Landing strip
Community
Bridge
Antenna
Main road
Pipeline
Hydrography
Island
Lagoon
Main river
Stream
Native communities – ethnic group
Achuar
Quechua of the Pastaza River
Affected river courtesy
BLOCK 1AB
Scale 1:220000
ECUADOR

misleading communications, broken promises, dishonest negotiations, purposefully manipulative and divisive tactics, and collaboration with militaries known for having committed human rights abuses. For decades Oxy has demonstrated a clear pattern of disregard for the rights of Amazonian indigenous communities. Some examples include:

***Colombia***

Oxy ignored the indigenous U'wa people's resolute opposition to oil drilling on their lands and their demands, over 10 years, that Oxy withdraw from their territory.[30] Instead, Oxy turned to the Colombian military for support and became one of the strongest proponents of the U.S. government's controversial financial, technical, and military aid project *Plan Colombia*, which included millions of dollars in U.S. aid to the Colombian military for the sole purpose of protecting Oxy's oil pipeline.[31] Oxy collaborated closely with the Colombian military, whose human rights abuses have been repeatedly recorded by the U.S. government as well as human rights organizations. In 2003, Oxy provided key support to the Colombian Air Force for its bombing of the small town of Santo Domingo, which resulted in the deaths of 19 innocent civilians. According to a subsequent lawsuit, through its security subcontractor AirScan, Oxy provided the bombing coordinates, aerial surveillance, and bombing targets, as well as facilities to plan the bombing.[32]

***Ecuador***

In 1985 Oxy became the first oil company to initiate activities in Ecuador's environmentally protected areas, thereby harming a number of ecological reserves and indigenous homelands.[33] Oxy manipulated and co-opted indigenous leaders, driving wedges within and among communities, resulting in the communities "granting" their "consent" for Oxy to operate in indigenous territories.[34] Oxy signed formal agreements with the Armed Forces of Ecuador which, on behalf of the company, regularly threatened indigenous communities with expulsion and expropriation of their lands if indigenous leaders wouldn't permit Oxy to engage in oil activities in their territories.[35] In the fall of 2004, the El Edén Kichwa communities filed an official complaint with the Ecuadorian government, providing 12 examples of how Oxy had violated their rights and contaminated their territories.[36]

***Block 64 in Peru***

Since 2001, the Achuar of the Pastaza River basin have been in an ongoing struggle with Oxy over Block 64, a 2.4 million-acre (over 971,000 hectares) concession located adjacent to Block 1AB. When the government originally granted the concession in 1995, local Achuar communities immediately and continuously denounced it, noting "the grave contamination to the environment, water, and resources on which indigenous communities depend" in adjacent Blocks 1AB and 8.[37] After years of Achuar protest, the original concession-holder, ARCO, transferred Block 64 to Oxy and two other companies, with Oxy acting as lead operator. Despite adoption of a new human rights policy in December 2004,[38] Oxy continued to utilize various pressure tactics to force community "consent" in concessions it operated in Block 64, in violation of the Achuar people's right and expressed wish to have no new oil activities in their territories.

## 4. A Fire Sale in the Peruvian Amazon

The Peruvian government has recently promoted a new and intense cycle of land concessions for oil and gas exploration and extraction, with the majority of these located in the Amazon rainforest. This trend began in the early 1990s with the deregulation of the hydrocarbon sector and the passing of legislation promoting oil and gas investment, and the government has continued to adopt measures to promote investment in the Amazon.[39] This, combined with the increasing global demand and high oil prices, has made the Amazon increasingly attractive for oil companies.

As of April 2007, PerúPetro, the Peruvian government's hydrocarbon contracting agency, had signed 61 contracts with international oil companies to explore and drill for petroleum. Of these, 47 contracts have been signed since 2000, with *31 of them – over half the total concessions – signed in 2005 and 2006 alone*.[40] The contractual terms range from 30 years for oil fields to 40 years for natural gas fields. These concessions are found primarily on indigenous territories and nature preserves in the Amazon. Multinational oil companies have been granted (or are in the process of being granted) almost 48.5 million hectares[41] of rainforest lands by the Peruvian government,[42] constituting an astounding 70 percent of the total 68 million hectares of Peruvian rainforest.[43]

# PART II

# *Occidental's Harm to the Achuar People's Health and Environment*

## 1 • Overview

In order to gauge the extent and impacts of Oxy's contamination, the investigative mission visited five sites within the oil concession Oxy had owned for 30 years in the northeastern Peruvian Amazon, known as "Block 1AB." The sites chosen were along and near the banks of the Corrientes and Macusari Rivers and their tributaries; the team made observations and conducted water and sediment sampling and blood-lead testing. Though both abandoned and active production areas were visited, particular attention was given to sources of "produced waters" – a waste by-product found in underground formations that comes to the surface with the oil and gas and is the largest by-product produced[44] – in the sample area. The water and sediment samples were preserved at cool temperatures and tested at laboratories in the United Kingdom, analyzed for metals and total petroleum hydrocarbons (TPHs), while the water samples were tested for polycyclic aromatic hydrocarbons (PAHs). The blood samples were tested to ascertain their lead content.

The sampling program provides some insights into the area and extent of contamination due to oil industry activities therein:

- Current and abandoned oil production and exploration areas are contaminated with petroleum hydrocarbons. The investigative team identified two locations where this is entering the wider environment. One site abandoned by the industry was found to have not been returned to a natural state; another had been the subject of a very poor remediation attempt.
- Samples collected around points of produced water discharge into the Corrientes and Macusari Rivers revealed significant evidence of local contamination with petroleum hydrocarbons. Increased salinity in rivers resulting from the discharge of produced waters was noted.

Typical of hydrocarbon extraction projects around the world, Oxy operated in three stages in Peru: exploration, production, and transportation. Each stage produced new and cumulative ecological, health, and human rights threats to indigenous communities.

- A majority of the people tested showed high blood-lead levels.
- There was clear evidence of the need for a thorough and comprehensive environmental assessment and remediation plan for the whole area, including abandoned oil sites.

## 2 • Occidental's Polluting Activities in Achuar Territory

In 1984 the Peruvian government's National Office of Natural Resource Evaluation (*Oficina Nacional de Evaluación de Recursos Naturales, or ONERN*)[45] – declared the area to be "the country's most damaged environmental region."[46] More than a decade later, in 1996, Peru's General Office for Environmental Affairs of the Ministry of Energy and Mines prioritized an environmental and territorial evaluation of the area for the first time, considering it one of the country's environmentally critical areas. It is estimated that *more than 24,000 acres (10,000 hectares) in Block 1AB have been directly affected by Oxy's operations, including rivers and lands directly impacted by Oxy's oil spills*[47].

Typical of hydrocarbon extraction projects around the world, Oxy operated in three stages in Peru: exploration, production, and transportation. *Each stage produced new and cumulative ecological, health, and human rights threats to indigenous communities*.

## Exploration through seismic testing

Oil exploration is done through seismic testing, which in the case of Oxy in Block 1AB involved destroying community-managed forests and constructing paths that are typically more than six feet wide and over a mile long. The seismic lines cut across communities, fields, animal habitats, sacred spaces, and rivers. Every half-mile, a 65-foot (19.81 meter) hole is drilled and an explosive is buried in the ground and detonated, sending shockwaves that indicate the location of oil traps.[48] Seismic testing involves noisy and disruptive machinery – generators, portable drills, air compressors, chainsaws, and motors – operating 24 hours per day. The noise scares away local game on which indigenous families depend for their subsistence.[49]

The arrival of the first teams of oil workers in the exploratory areas came as a complete surprise to the local population – they had not been informed by Oxy or the Peruvian government of the imminent intrusion onto their lands nor asked for their prior consent. As a result, indigenous families were forced to relocate from their homes to make way for the oil camps. This exodus lasted for several years, given the constant movement of seismic equipment, test wells, worker camps, vehicles, shops, and helipads, as well as the opening of trenches and detonating of explosives. [50]

The migration of people attracted by employment opportunities with Oxy put additional pressure on forest resources. Oxy built crude bathrooms and manually constructed latrines for company workers that drained directly into nearby rivers and streams. Workers used the natural resources from the area, such as palms, wood, gravel, sand, and forest vines, to build Oxy's installations, thereby seriously decreasing the amount available for local indigenous families.[51]

Once the exploratory phase was completed, Oxy no longer needed the unskilled labor it had hired and laid off the majority of its workers. These individuals had been previously unemployed people recruited from the capital or provinces; when they lost their jobs with Oxy, they settled in the area along with the migrants and began to farm. This intensified the conflicts with local indigenous communities over rights to the natural resource base and to the land itself.[52]

## Oil production and transportation

During the production and transportation phases, Oxy's activities contributed to significant environmental and public health harm in at least three ways: (1) by discharging contaminated produced waters directly into local waterways; (2) by storing oil wastes in unlined earthen pits; and (3) by periodic spills of crude oil and other products. [53]

### *Produced waters*

The production phase involves pumping drilling fluids (highly toxic chemicals pumped into wells as part of the drilling operation and drawn from the well with the crude as part of the production waste)[54] into the reservoir to push oil out of the rock. These toxic chemicals join with "formation waters" (very salty waters that lie below the hydrocarbons) and surface from the well with the crude as part of the production waste.[55] These "produced waters' are then separated from the oil at a number of separation batteries (installations in which desirable crude and/or gas is separated from produced waters) throughout Block 1AB, and discharged directly into streams (*quebradas*), including the Quebrada Pucacuro (which flows into the Macusari River), and Quebrada Huayuri and Quebrada Jibarito (which flow into the Corrientes River). As oil fields are depleted, the volume of produced waters increases.

"I have seen the petroleum spills myself. . . . I've seen this with my own eyes. Before Oxy, it wasn't like this. The river was beautiful . . ." [66]

Over the years, Oxy sent increasing quantities of this chemical waste directly into the previously pristine environment of the Corrientes River basin. Due to the constant nature and volume of this discharge, this is likely to represent a major potential pollution vector in the area. This production waste typically includes a mix of sulfates and bicarbonates of sodium, calcium, and magnesium, as well as heavy metals such as mercury, cadmium, barium, chromium, lead, and arsenic, and hydrocarbons, organic and radioactive compounds, and dissolved gases.[56] When released from the ground, the mixture has an extremely high salinity and temperature (194°F/90° C).

As per Oxy's so-called environmental management plan, the company directed the produced waters from the primary oil-water separator into a drainage system that eventually flowed into the main rivers in the region.[57] *Oxy's operations resulted in an average of 850,000 barrels of toxic produced waters per day, equivalent to approximately 9 billion barrels in its 30 years in the Corrientes region.*[58]

The discharge of produced waters into the local streams was no secret. A Saukí man interviewed by the team said: "I personally saw the chemicals in the [Quebrada] Pucacuro . . . I have also seen chemicals and crude oil coming into the water at [Quebrada] Jibarito."[59]

### *Earthen pits and waste disposal*

*Earthen pits are dug directly into the ground; they do not have liners or barriers and are not covered or closed, and for that reason were, by the 1970s, already largely banned in oil-producing states across the U.S.*

Oxy drilled approximately 230 wells in Block 1AB, and typically each well had two or more earthen pits used to store drilling mud, crude oil, and well-maintenance by-products. Oxy also dug earthen pits at eight production stations, where they were used to store produced waters. Oxy nonetheless used these pits to store drilling fluids used during well-drilling operations, crude oil produced during initial well-testing at each well, and by-products at each transfer station. *These earthen pits overflowed over the course of time onto the ground and into surface waters and leached into the surrounding soil and groundwater.*[60]

Local residents were aware of and commented on Oxy's poor storage and disposal of its toxic wastes. A resident of Saukí noted: "I worked at Jíbaro and saw oil waste and garbage thrown out and covered with dirt. I saw Oxy dumping waste near Teniente López [on the Corrientes River]. The Oxy employees knew the waste was contaminated. It should not be this way."[61] Another local man noted that when Oxy left the area ". . . they just dumped the leftover chemicals."[62]

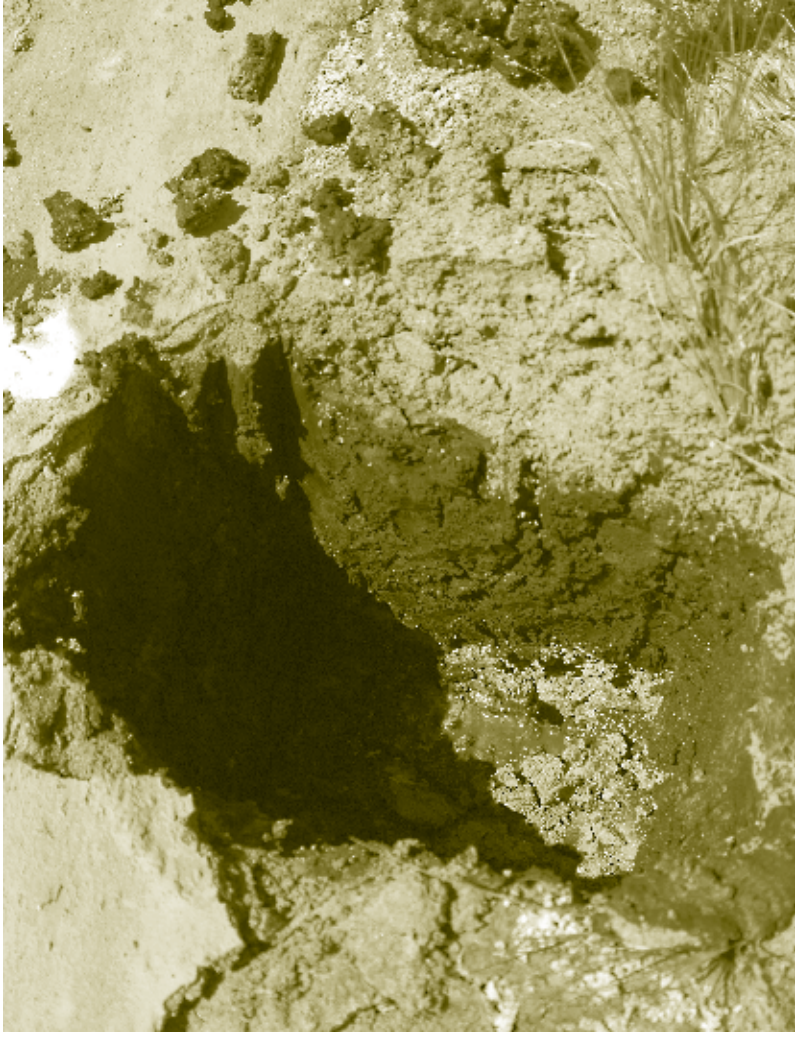


Photo: Nathalie Weemaels

*Near José OIaya and the Huayuri Norte installation, the superficial soil (5 cm) consists of clayish silt. Just beneath the silt, it looked and smelled to the investigative team like pure crude.*

### *Oil spills*

A considerable source of the contamination resulting from Oxy's activities was oil and chemical spills that occurred during the loading and unloading of crude as well as during its transport to the refinery and other operations.[63] One man from Nueva Jerusalén noted that "the pipeline sometimes breaks, and oil spills and goes into the river, and the rain takes it further, and the fish are harmed."[64] Another man from the same community stated that "I have seen this myself; there was a big truck with chemicals that fell into the stream."[65] Many other residents described seeing crude oil come down the rivers.

## 3 • The Contamination Continues Today

Since the Argentinean company Pluspetrol took over Oxy's concession in Block 1AB in 2000, it has continued the same practices employed by Oxy that had produced the environmental and public health harms, particularly the storing of toxic chemicals in unlined pits and discharging of vast amounts of produced waters into rivers and streams. As one man from Antioquía noted, "Pluspetrol came and continued contaminating . . . ."[67] Another noted that "the [Corrientes] river was completely contaminated when Oxy was here, but Plus[petrol] is still contaminating."[68]

Recently, Pluspetrol announced its intention to improve on Oxy's practices: in October 2006, the indigenous communities of the Corrientes River basin, FECONACO, the Ministry of Energy and Mines, the Ministry of Health, the regional government of the department of Loreto, and Pluspetrol Norte, S.A signed an agreement that mandates that Pluspetrol reinject 100 percent of the produced waters from the company's operations in Blocks 1AB and 8 by the July 2008.[69] However, as of this writing, Pluspetrol has not complied with all of its obligations under the agreement. For example, it has not yet handed over to FECONACO the company's technical plans and logistics and execution reports related to the re-injection of produced waters, as required by the second and eighth clauses in the October 2006 Act of Agreement. While in March 2007, Pluspetrol complied with the requirement to hand over the first part of the funds agreed to for the financing of one year of activities of the Integrated Health Plan, it attempted repeatedly to renege on that part of the agreement.

### Waste storage and disposal

The problems with improper waste storage, disposal, and remediation of contaminated sites continue today. For example, the investigative mission visited three oil industry sites in Block 1AB, known as Huayuri Norte; Dorissa X-19-C; and CECI.

Huayuri Norte is still in use: it is located approximately 6/10 mile (1 km) from the Corrientes River and upstream of the Achuar community of José Olaya. The team observed that the forest here had clearly received a spill of crude oil from the production area. Along one side of the site were what appeared to be a series of containment pits which had originally been lined with a plastic membrane. In one location, the containing membrane and supporting earth bank had been excavated. A channel dug from this point linked the pits to the forest edge. A sample of the black soil/silt-like solid collected from the channel contained petroleum hydrocarbons and elevated levels of some metals. A sample collected from inside the forest close to the end of this channel was highly contaminated with crude oil, the presence of which was clearly visible. This site demonstrates the worst of the storage practices: crude oil in direct contact with the environment, with no containment.

The CECI site, by contrast, appears to have been abandoned by the oil industry quite a long time ago and demonstrates the poor state in which former production areas have been left. At this site, located down the Macusari River from the Achuar community of Nueva Jerusalén, the team observed a limited amount of infrastructure, including well heads. The site, which is elevated from the river level, appeared to be extensively contaminated. Petroleum hydrocarbons were found in soil from a waterlogged corner of the site. In a channel running from the CECI site to a tributary of the Macusari, which had apparently been modified from its natural state, sediments also showed contamination with petroleum hydrocarbons. Although abandoned, the CECI site is still susceptible to leaching or run-off.

Finally, the Dorissa X-19-C site was notable for its obvious alteration of the natural ecology. The team observed that there had been major earthwork undertaken at this large, deforested site, and some evidence of the oil infrastructure that had once been present was still visible. One significant impact of this deforestation and earth moving has been erosion, destroying the forest soils with an incursion of silt and sand.

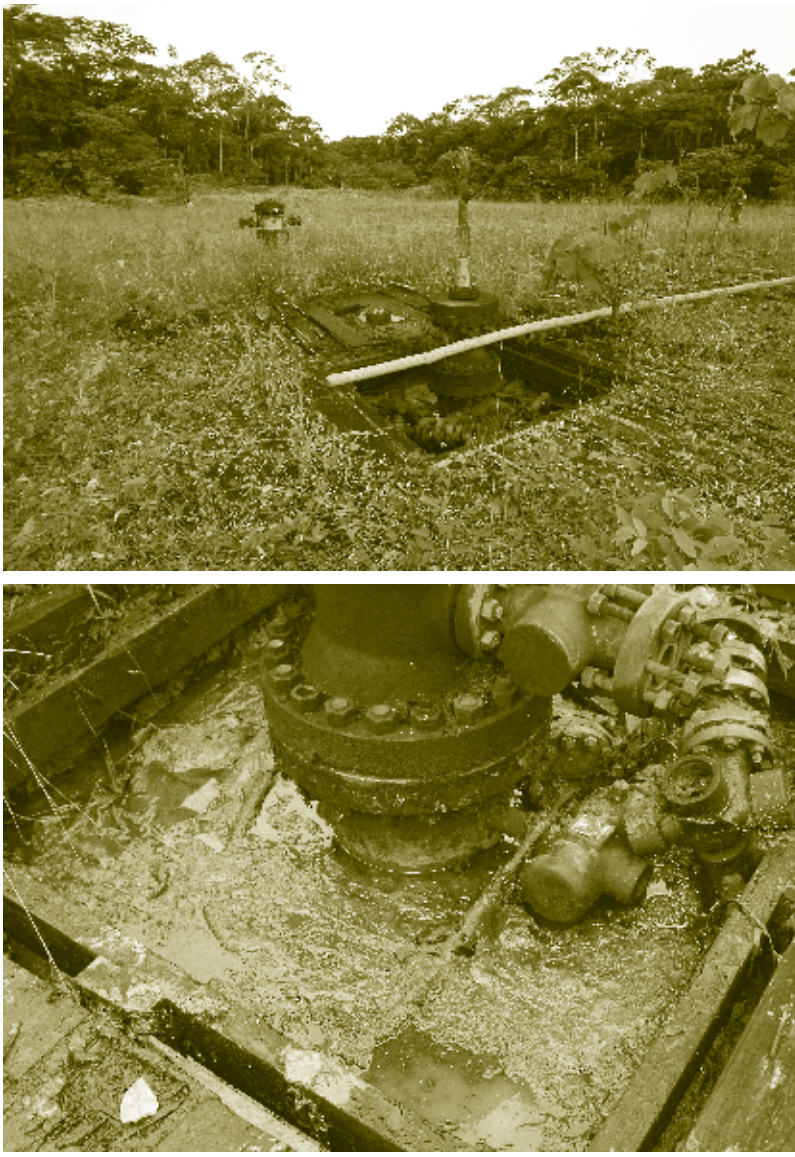
### Discharge of produced waters

Pluspetrol acknowledges that it continues to discharge produced waters into the local environment, just as Oxy did. As noted above, produced waters commonly contain radioactive isotopes, heavy metals, and high salinity. Our investigation, as well as a recent study by the Peruvian Health Ministry's General Directorate

for Environmental Health (*Dirección General de Salud Ambiental,* or DIGESA),[70] demonstrates that the discharge of produced waters continues to negatively affect the local environment and present dangers to human health.

The five Achuar communities that are the focus of this report are affected by at least three major produced water discharge points into the local *quebradas*. Produced water is released into the Quebrada Jibarito[71] and Quebrada Huayuri, both flowing into the Corrientes River, and Quebrada Pucacuro, which flows into the Macusari River. Our own investigation collected water and sediment samples in the receiving rivers upstream and downstream of the entry of these streams, as well as in the streams themselves. Similarly, the DIGESA study collected water samples in the streams above and below the point of discharge, as well as sampling the discharged produced water itself, a few samples in the Corrientes and Macusari Rivers, and a few sediment samples.[72]

*Analysis of these water samples demonstrates that the chemistry of the produced waters being discharged into the environment is substantially different from the uncontaminated streams and rivers, and alters the chemistry of the waters into which they are discharged.* The most pronounced impact of the produced water discharge is increased salinity, which can render water unfit for drinking and harm aquatic life. Two measures of salinity are conductivity and chloride concentration. The three contaminated streams all showed appreciably elevated conductivity, which was also found in the Corrientes and Macusari Rivers. As for chloride, the U.S. Environmental Protection Agency (EPA) recommends no more than 230 mg/L of chloride in freshwater to prevent chronic damage to aquatic life[73] ; by comparison, seawater contains approximately 19,000 mg/L of chloride. Samples of pure produced waters contained about 60,000-100,000 mg/L of chloride,[74] up to five times more than seawater. This input resulted in the three streams – the Huayuri, Jibarito, and Pucacuro – receiving produced water discharge containing chloride at concentrations of 575.9 mg/L; 3,939 mg/L; and 4,361 mg/L respectively.[75] *Such high salinity is likely to have a considerable negative impact on the surrounding environment and renders the water undrinkable.*



Photos: Nathalie Weemaels

*The CECI site, southeast of Nueva Jerusalén, about 4 km down the Macusari River. While it should have been removed by Oxy, the well's infrastructure is still in place and represents an ongoing source of contamination.*

Both our investigation and the government study also found elevated levels of elements associated with produced waters, such as barium. Barium is a characteristic component of formation waters and, as barite (barium sulfate), is also used as a weighting agent in drilling mud. Ingestion of high levels of barium can cause a range of health effects, including gastrointestinal problems such as vomiting and diarrhea, as well as muscular weakness; in extreme cases barium can cause heart problems, paralysis, kidney damage, and death.[76] High concentrations of

*Produced waters from Huayuri installation flowing directly into a feeder stream to the Corrientes River.*

Photo: Nathalie Weemaels

barium are also known to decrease crop yields.[77] The World Health Organization (WHO) recommends no more than 0.7 mg/L of barium in drinking water.[78] While the uncontaminated, upstream waters of the Corrientes River basin show only about 0.03 mg/L of barium, well below any level of concern, the produced waters range from 12-18 mg/L of barium.[79]

Our investigation found elevated barium levels in all of the contaminated streams, with the highest levels, at 2.0 mg/L, in the Quebrada Jibarito; the DIGESA study similarly found barium concentrations above the recommended levels in the Jibarito and Pucacuro streams.[80] We found a similar pattern with boron. The health effects of boron are not well-known, but ingestion of large amounts is thought to harm the gastrointestinal tract, liver, kidneys, and brain, as well as potentially causing birth defects[81]; WHO recommends no more than 0.5 mg/L of boron in drinking water.[82] While the natural waters of the Corrientes River basin have no detectable boron, the produced waters contain boron in many times the recommended concentration, and the Jibarito and Pucacuro streams show boron concentrations of 0.9-1.0 mg/L – about twice the WHO limit.[83]

Of potentially greater concern are heavy metals such as arsenic and lead in the water samples, which can cause severe health effects. Arsenic is carcinogenic and causes gastrointestinal distress as well as damages to the heart and blood vessels, and is known to accumulate in fish and other aquatic organisms[84]; lead poisoning causes a range of health and developmental problems discussed more fully in the health impacts discussion below. Arsenic is generally present in the discharge streams sampled here at levels just below the drinking water standards set by EPA.[85] As noted above, arsenic is a known component of produced waters, and the possibility that it may be present in greater concentrations at times – or has been discharged in greater concentrations in the past – should not be ignored.

Lead was found in several water samples in the Pucacuro and Huayuri streams, as well as in the "residual waters" of the Huayuri separation battery.[86] EPA recommends that lead be eliminated from drinking

water completely.[87] While it is not clear whether the produced waters themselves are the source of the lead, it is likely that the oil activities have caused the lead contamination, possibly from leaching from polluted sites or from spills. No lead was detected in the river waters upstream of the oil operations.

Another set of harmful chemicals associated with oil contamination are PAHs, which are known to be present in crude oil. While the DIGESA study apparently did not test for these compounds, our investigation found PAHs in samples from the Corrientes River downstream of the Quebrada Jibarito and in the Quebrada Pucacuro. EPA reports that these compounds, such as benzo(a)pyrene, can damage red blood cells and lead to anemia, suppress the immune system, and cause developmental and reproductive harm, as well as cancer; it warns that there is no known "safe" concentration of these chemicals and recommends no more than 0.2 µg/L in drinking water.[88] The samples that tested positive for these chemicals were far above this concentration: the Corrientes River sample had a total of 222 µg/L of PAHs, including 14 µg/L of benzo(a)pyrene, and the Quebrada Pucacuro sample tested at 135 µg/L of PAHs, including 7.5 µg/L of benzo(a)pyrene. The presence of these chemicals in some samples but not others is possibly due to the fact that they are generally not soluble in water, so they are not expected to be evenly mixed throughout the water.

Finally, sediment testing also demonstrates oil contamination. Our investigation found that sediments from each of the three contaminated streams were contaminated with petroleum hydrocarbons; although DIGESA took only six sediment samples in this area, their results also demonstrate contamination with petroleum.[89] Our investigative team observed visible contamination with oil of both the stream banks and the water itself, which could result from the produced waters or from oil spills and other sources, as discussed below.[90] Metals analysis of sediments echoed the results of water analysis; for example, our investigation found elevated levels of barium in sediments of all of the contaminated streams and at downstream points in the Corrientes and Macusari Rivers. This could result from inputs of water laden with minerals or silt, deposition from which would result in greater sedimentary heavy metal concentrations.

Photo: Nathalie Weemaels

*Adam Walters, the investigative mission's chemist, and the team's local guide, take sediment samples on the bank of the Corrientes River, upstream from the mouth of the Quebrada Huayuri. The bare soil had a slight smell of hydrocarbons.*

## A river of petroleum

As noted above, produced water discharge and contaminated production sites are only two of the known sources of contamination; oil and chemical spills also present great potential for pollution. Anecdotal evidence, as well as our observations, suggests that the effects of spills dating back to Oxy's operations can still be seen, and that such spills are still occurring.

During our investigative mission, traces of oil contamination could be observed along vast stretches of riverbank. These black stains, observable mostly on dead vegetation (trunks) and soils or rocks, have been caused by old oil spills. On the Corrientes River, black stains were observed in several places, particularly between Jíbaro station and the community of Antioquía. On the Macusari River, black deposits were continuously observed from the team's starting point at Puesto Macusari until at least midway between Puesto Macusari and Nueva Jerusalén.

A man from Saukí in his late 20s attested to this, telling the team that "the chemicals [in the Corrientes River] stain the embankments black and petroleum-pink."[91]

According to local Achuar, the oil spill that contaminated the banks of the Macusari River dates back to Oxy's activities in the region. A woman from José Olaya stated that "Oxy never told us that the water was contaminated. In Oxy's time it seemed grease used to come down the river, and the canoes were black, and we pushed the top layer of pollution aside and took the water from underneath."[92] A man in his mid-20s from Jíbaro said, "I have observed contamination in the river, too. The water [in the river] has changed color to a mixed blue-green. . . . The contamination sources are two streams downriver and Jíbaro; the streams empty into the Corrientes [River]." [93]

A woman in her 50s from Pampa Hermosa recalled: "There was a spill in Jíbaro; I know this because it came down the river, and people saw it in the river, and I saw the contamination myself. It was pure petroleum for about a week."[94] In discussing dumping, one man from Nueva Jerusalén said, "The company has cheated us here. They have dumped everything in the water, including salt and gasoline, and never asked for permission."[95] A fellow community member agreed: "When the company entered, petrol and grease and oil would flow down the river . . . ."[96]

For the past 30 years – and continuing today – oil contamination from the routine discharge of produced waters; poorly stored toxic wastes; poorly remediated production sites; and accidental spills have contaminated Block 1AB.

## 4 • Environmental Harms Resulting from Occidental's Activities

For the past 30 years – and continuing today – oil contamination from the routine discharge of produced waters; poorly stored toxic wastes; poorly remediated production sites; and accidental spills have contaminated Block 1AB. According to Oxy's own environmental impact studies[97] and confirmed by the experiences of the Achuar, this contamination has caused a range of detrimental impacts on the local environment.

A woman from Pampa Hermosa noted: "Before Oxy, we did not have these problems. Then Oxy started sending salty water down the river . . ."[99] The problem of salt figured prominently in many interviewees' concerns, including a man and woman from Nueva Jerusalén, who stated that "there is salty water in the streams, but we eat the fish because we do not have anything else to eat. We eat fish whenever we find them, but all the fish are contaminated."[100]

*Today the Achuar have to travel much greater distances only to return home with far less food than they once could have caught or fished. Farms are less productive, and the areas available for cultivation have been significantly reduced.* Despite greater community efforts, families generally have smaller food supplies than what they enjoyed prior to Oxy's incursion onto traditional Achuar territories; much of their foodstuffs are in varying states of contamination, resulting in devastating health impacts.[101] A man in his late 20s from Saukí noted that "the contamination comes from the company well at Dorissa [a production station]. Oxy was working there and the stream came out contaminated. Oxy threw its wastes from Dorissa into the Macusari [River]."[102]

### Contamination of Achuar lands

In traditional Achuar communities, plots of land are usually located close to rivers to make it easier to wash the products after harvesting them. These plots also offer the advantages of being flat and having richer soils than those found on nearby hillsides. Most of these lowland plots, however, are vulnerable to floods. Indeed, according to Oxy's environmental impact assessment (EIA) for exploration of Block 1AB, the Pastaza, Corrientes, Capahuari, Macusari, and Tigre Rivers flood extensively during the rainy season,

"Before Oxy came, we lived peacefully, happily; we took water from any river or stream. Now we suffer bad health from oil; we do not drink the water anymore; we need to throw out the salty contaminated water; the fish are contaminated also." [98]

contributing to the development of a system of temporary and permanent ponds.[103] When flooding occurs, crops are sometimes contaminated by oil (which seems to have occurred frequently in Oxy's time), and always by diluted produced waters. Lowland plots are also continuously affected by constant water migration from the rivers, which produces toxic contamination. Home gardens also face possible flooding.[104]

As a result, at times families must eat contaminated food. A community member from José Olaya described the impact contaminated waters have on Achuar crops and lifestyle:

> *Some of the manioc [the Achuar's primary staple crop] is really hard, and the roots of the plantain are rotten; surely this is from contamination because when the river rises, the crops are flooded with contaminated water and the farm is black. The river floods all of the farms, and when it recedes petroleum is left behind. When it rains, the petroleum goes everywhere. We are moving [most of]the farms away from the contamination, and also farther away from the community, but some of the farms are staying.*[105]

Our investigation found that Achuar families have responded to this environmental hazard by moving their plots away from riverbanks to higher elevations, but that this practice reduces agricultural productivity and yields, as soils are often poorer in areas located at higher elevations. Although manioc grows successfully in the lowlands and on hillsides, many other staple crops, such as plantains, yams, taro, beans, and corn are nutrient-demanding and, to grow successfully, must be cultivated in the lowlands. Thus, the fear of oil contamination is forcing the Achuar people, and particularly the women, to work more while obtaining lower yields from less fertile soils.

## Achuar crops stunted by contamination

While a plant's propensity to absorb a particular chemical depends on a multitude of factors (including the chemical, type of soil, and local humidity), some conclusions can be drawn regarding the contamination generated by Oxy's activities in Block 1AB: (a) dumping produced waters into rivers causes unnaturally high levels of salinity, which desiccates crops; (b) oil contamination leads to the weakening of short-lifecycle crops and sometimes kills plants, as their roots are superficial; (c) toxins may enter plants and contaminate the edible parts; and (d) tubers are more sensitive than other plant parts found aboveground. According to community members interviewed, in addition to lower yields and smaller plants, many crops critical to their daily nutritional intake suffer a variety of symptoms the interviewees impute to oil contamination.[106]

A man from Saukí in his 30s told the investigative team that "the contamination has harmed my manioc plants in my farm. About half the plants are affected; they do not grow well, they are stunted, and they have no edible roots. About half the plantains are also affected."[107]

## Damage to vegetation

### *Structural change and desiccation of riverine vegetation resulting from produced waters*

The investigative team observed clear evidence of desiccated vegetation and structural changes in the forest along the Corrientes and Macusari Rivers, particularly visible around the mouth of the Quebrada Huayuri – the natural stream through which produced waters from the Huayuri Station pass to the Corrientes River. Upstream of the Quebrada Huayuri, vegetation is typical of riverine rainforest and is characterized by a multitude of tall, mature trees; healthy plants at

Photos: Nathalie Weemaels

*LEFT: Desiccated soil with dead plants at Oxy's abandoned well at the Dorissa installation.*
*RIGHT: Extremely desiccated soil on the Huayuri North platform, covering old pits still filled with crude.*

all layers of the forest; a thick overhanging canopy; and diverse, lush vegetation with dark green leaves. By contrast, downriver, there is a lack of tall, mature trees; a general desiccation of all vegetation; and a lack of plant diversity. [108]

Daily dumping of thousands of barrels of produced waters has produced unusually high salinity in local rivers, causing desiccation of riverbank vegetation. Indeed, *salts limit plants' ability to absorb water to such an extent that even in close proximity to a river in an area with yearly precipitation higher than 118.1 inches (3,000 mm), plants suffer from desiccation* and become more sensitive to hydric stress (i.e., plants are more sensitive to a shortage of precipitation than they would otherwise be. Rainforest species are particularly susceptible to salts because their root systems are typically superficial).

Attesting to the high levels of salinity, a woman from Pampa Hermosa said that "the water on the banks of the river is salty, and it sometimes flows upstream as well. When I drink the salty water, I get a stomachache, but I have to drink water."[109] Other interviewees also spoke of the salinity in the waterways: "The Macusari River is contaminated. The water is salty."[110] "The water started tasting salty during Oxy's time," said another. [111]

> One woman from José Olaya noted that ". . . sometimes when you kill a game animal, it is pure petroleum inside."

The death and disappearance of mature trees, along with the sensitivity to hydric stress of pioneer trees – the first tree species to grow after a disturbance – favor the excessive growth of climbing plants, which, in turn, further impedes tree regeneration. Thus, desiccation caused by produced waters has an insidious effect on the structure and diversity of riverine forests. Resulting vegetation lacks diversity, remains low to the ground, and is much more similar to herbaceous or bushy vegetation than to the dense tropical rainforest that existed prior to Oxy's arrival.[112] The investigative team concluded that it is highly probable that such radical changes in the ecosystem's structure and diversity have the distinct potential for endangering the aquatic fauna that depend on overhanging vegetation for food and shelter.

***Impacts of spills in flooded areas***

The interfluvial rainforest and lowlands of Block 1AB include important wetlands and swamps, some of which are located close to oil installations. With slow to no drainage abilities, these ecosystems are particularly sensitive to oil contamination, which spreads easily across the flat, broad terrain and lingers in the environment, even after flooding periods. Lakes in Block 1AB have also been contaminated by oil waste, which remains on their surfaces for many years.[113]

Pluspetrol's own 2004 environmental plan for Block 1AB pointed out the sensitivity of the local ecosystems to the extraction industry's wastes when it noted: "The ecosystem of an *aguajal* [a natural population of palm trees in permanently flooded swamps] is extremely sensitive to produced waters and can tolerate very little impact as compared with other ecosystems. Forest species die easily when the zone they are in is impacted by production waters or soil erosion."[114] As priority feeding areas, any contamination of *aguajales* affects tapirs, capybaras, and peccaries – game eaten by the Achuar – as well as affecting fish reproduction, as many species deposit their eggs in these fragile ecological areas. Additionally, the sensitive *aguaje* palm tree, found in the *aguajal*, is a source of fruit and other non-timber forest products for the Achuar.

Oil in ponds and swamps decomposes extremely slowly due to low levels of oxygen. Hydrocarbon deposits at the bottom of lakes and swamps additionally reduce the oxygen supply, inhibiting the survival of animals and plants found in lake sediment and endangering the food chain.[115]

## Animals and birds in Achuar territory affected by contamination

During the investigative mission, the team observed the following wild animals or their tracks along rivers and streams contaminated by produced waters: capybaras, red deer, tapir, turtle, caiman, jaguar, armadillo, paca, peccaries, toucans, macaws, wild turkeys, and other large birds.

Generally, big game does not visit interfluvial areas, except swamps; the latter draw a high number of animals. Nevertheless, the team observed a large number of tracks along contaminated waterways in the interfluvial zones, which is abnormal for that kind of ecosystem. Both wild and domesticated mammals in the Amazon naturally lack salt, for which they must always search; however, they now find it in the salty produced waters dumped into the environment. As the animals ingest the salts, they also ingest toxic matter. Since these salts contain heavy metals that bio-accumulate, animals that drink the waters or bathe in the rivers later contract chronic physical ailments such as kidney and stomach diseases.

***Hunting made significantly more difficult for the Achuar***

According to interviews conducted in the five communities, local game populations are diminishing and withdrawing to pristine areas far from communities to avoid the noise, deforestation, contamination, human presence, and other disturbances caused by the oil operations. One man from Saukí commented: "Hunting has also been affected; there are no animals now, and we need to go 25 or 30 km [15.53 or 18.64 miles] away to find animals."[116] Contamination-related mortalities are also contributing to population decline among game animals. Community members often find dead animals next to contaminated streams or floating in the water (particularly on the Jibarito and Pucacuroyacu streams). One woman from José Olaya noted that ". . . sometimes when you kill a game animal, it is pure petroleum inside."[117]

As a result of this decline, hunters have to walk many hours more to find game, and even then sometimes return home empty-handed. A man from Antioquía bemoaned the fact that "there were animals [before Oxy's arrival] along the riverbank that we hunted. Now there are no animals. We have to walk four hours into the forest to find the animals now. It did not use to be this way . . ."[118] It is also safer to hunt in pristine areas away from oil facilities, as the animals that are closer to communities are in greater proximity to contamination and may be sick. In Nueva Jerusalén, they can only hunt on one side of the Macusari River, as the other is contaminated.

A man from Nueva Jerusalén agreed: "The animals in the forest that we hunt are contaminated, too, because they drink the water; the jungle cows eat salt and the chemicals are salty." [119]

According to community members, many animals – especially tapirs, capybaras, deer, and peccaries – that spend time close to oil facilities are skinny and look sick. Even when animals appear perfectly normal,

"The company [Oxy] came and put lots of chemicals in [the river], and animals that drank the water died. The company said that the petroleum doesn't cause sickness, but they tricked us. The chemicals are in the animals in the bush that we eat." [120]

people often discover oil in the meat, enlarged kidneys, or encounter a strange taste identified with petroleum. The fact that they don't know where the wild animals feed worries the Achuar, who fear they may get poisoned without knowing it. Indeed, they sometimes get sick after eating bush meat without having noticed anything irregular in the meat beforehand.

Meat is the Achuar people's favored food and is very important to their traditional diet, particularly tapir, turtle, armadillo, paca, peccaries, and large birds. While many Achuar claim that a life without meat is not worth living,[121] those visited by the investigative team currently eat little meat, which has become virtually a delicacy.

***Fish and aquatic fauna impacted by contamination***

Many elements of crude petroleum and its associated products have an adverse impact on fish and aquatic life. For example, PAHs and heavy metals – both carcinogenic – accumulate in edible fish tissue, and from there enter the food chain.[122] Most freshwater organisms, moreover, do not tolerate the high levels of salinity found in produced waters and may die as a result. According to the ONERN's 1984 EIA for exploration of Block 1AB, the Pastaza, Corrientes, and Tigre Rivers were once teeming with fish, with the number of species estimated at more than 1,000.[123]

Unfortunately, oil companies' dumping of toxic wastes into rivers and wetlands has had a very deleterious impact on aquatic ecosystems, as confirmed by Achuar community declarations. A woman from José Olaya stated: "If we cannot fish, where will we eat? Now that we know that it's contaminated, we go further upstream . . ."[124] A man from Saukí concurred: "Before, fish were healthy, but today their outsides are hard . . . Oxy contaminated it [the river], and it's still contaminated. . . . We can't do anything with this river. . . . [T]here aren't many healthy fish. . . . Before Oxy, this river was good . . ."[125]

Contamination has led to a drop in the numbers of phyto- and zooplankton, aquatic larvae and eggs, animals that feed by filtration, aquatic turtles, and bottom-dwelling fish, which are all particularly sensitive to contamination.[126] As early as 1992, the Institute for Research on the Peruvian Amazon (*Instituto de Investigaciones de la Amazonía Peruana*, or IIAP) found that fish used for human consumption in the Corrientes region contained high levels of lead, causing biological anomalies and diseased tissues.[127]

When discussing the negative impacts oil contamination has had on local fish and aquatic life, Achuar interviewees noted the following:

- fewer fish than before Oxy operations began
- fish are smaller and sometimes of a different color
- in some streams,[128] fish flesh is tough and fish smell and taste of petroleum
- many ponds and lakes where people used to fish are now contaminated
- people keep fishing in contaminated areas because uncontaminated areas are too far away
- people sometimes get sick after eating fish
- people consume more fish than meat, normally eating fish every day

Members of the five Achuar communities visited described the impacts of Oxy's activities on local fish:[129]

***Pampa Hermosa***

Community members try to avoid fishing in the Corrientes River. Nevertheless, sometimes they consume fish from the river even though they know it may be contaminated. To find uncontaminated fish, people have to walk 12 hours round-trip between Pampa Hermosa and unaffected areas on the Camaronyacu and Chambirayacu streams. Before Oxy's operations began, the Achuar used to fish in nearby lakes; today all those lakes are contaminated. Even a small lake located 10 minutes' boat ride from Pampa Hermosa no longer has any fish in it due to contamination.

***José Olaya***

People in José Olaya mainly fish in the Corrientes River, where they catch contaminated as well as uncontaminated fish. Contaminated fish may come from the very contaminated Quebrada Huayuri, which is 5 "meanders" (i.e., curves in the river) upstream from the community. It is also unsafe to fish upstream from the mouth of the Huayuri stream, as fish there may have previously been in the contaminated streams. To find uncontaminated fish, people have to walk a day or a day-and-a-half. According to a member of José Olaya, "in the Huayuri stream, even little fish the size of your hand die."[130]

***Nueva Jerusalén***

People in this community fish primarily in the contaminated Macusari River and Pucacuro stream, where most of the fish caught are contaminated. Community members told the team that fish caught in the Pucacuro stream always stinks of petroleum and has tough skin. Because contaminated fish are easy to catch and the Achuar have few other sources of protein in their diet, people are often forced to eat these fish anyway. In the past, community members used to visit a beautiful nearby lake to catch fish and caimans, but an oil spill slicked it over, and they can no longer use this site. Other nearby lakes are in equally poor condition. Only in some small streams can they sometimes still find uncontaminated fish. As an alternative, for the last eight years, the community has run a fish farm at CECI (old Oxy wells) harvesting Tambaqui (Gamitana – *Colossoma macropomum*).

***Saukí***

People from Saukí still eat fish from the Macusari River. In the past, people could fish in the river directly in front of the community and each person could catch a basket of fish. Today there are no fish in the area, so community members must travel five meanders up the river, and yet even so they are not able to fill an entire basket.[131] A Saukí woman in her 40s told the team:

> *I have seen waste dumped by the bridge. There is also oil waste at Jíbaro. I have seen contaminated water from the Corrientes River, black water. The whole area is contaminated. Fish come out of the river covered in oil and dead. The fish are full of oil.*[132]

***Antioquía/Jíbaro***

A member of this community summarized their riverine activities:

> *My family eats fish every day. I catch the fish in traps, and I fish in the Corrientes River. There are lots of fish here, but the traps catch petroleum as well as fish. When we lived in Antioquía, we fished in the same river, and had the same problem. Before, the fish were not like this, especially the Boquichico; some are very tough and skinny now, and you can even see petroleum in their guts.* [133]

## 5 • The Significant Toll on Achuar Health Resulting from Occidental's Operations

Our medical team examined a total of 140 patients in the five communities visited. The team visited individual homes and each community's health center, conducting medical consultations and interviews for environmental health history. Blood samples were taken from a total of 73 individuals, of whom 59 were from children – a significant number registered high blood-lead levels.

### General health impacts: Achuar testimonials

Many residents of the Achuar communities reported ailments possibly linked to physical exposure to chemical contamination – such as rashes and other skin disorders – and aches and pains that may be related to contaminated water:

*TOP: Dr. Nils Hennig, the investigative mission's doctor, examines Achuar child in the community of Jíbaro. BOTTOM: Dr. Hennig tests blood taken from members of Achuar communities to ascertain the blood-lead level.*

PHOTOS: NILS HENNIG

- "My whole body aches, and my feet are heavy; I have trouble walking and I have to walk with a cane. I also have rashes and heat flashes. I have not been seen by a doctor."

  *– 60 year-old man from Pampa Hermosa*[134]

- "Now, because of the contamination, I feel like my body is dead, and have not been able to work for a long time. I always feel that my stomach hurts, and my bones hurt, and I have pain in my vaginal area."

  *– woman, mid-40s, from Pampa Hermosa*[136]

- "I do not have physical pain, but I have had hemorrhaging twice, within the last two months, and have passed blood in my urine."

  *– woman, mid-30s, from Pampa Hermosa1.*[137]

- "I have experienced shaking and heart palpitations. My mouth shakes and I have lost the ability to think; I can't remember, can't breathe, I have pain in my chest and stomach. I have pain when I urinate, and my bowel movements hurt. I have never been seen by a doctor."

  *– 50-year-old woman from Pampa Hermosa*[138]

- "When you pick up the water it stays in your hand; it stays on your skin after bathing, and in the afternoon you get itchy . . ."

  *– 50-year-old man from Nueva Jerusalén*[139]

- "It is hard to walk. My body aches. My lower abdomen also hurts. No one has told me why I am sick."

  *– woman, mid-40s, from Saukí*[140]

Given the extremely poor state of health care and medical facilities in the five communities studied, it is difficult to determine the true extent of the health problems directly caused by oil contamination; however, oil pollution does have a range of known health effects. Exposure to oil and its associated chemicals is known to cause skin ailments including tumors, increased rates of cancer, spontaneous abortions (miscarriages), lesions in various organs, and generally increased rates of mortality.[141]

Several deaths have occurred in the communities following ingestion of apparently contaminated water. One man from Nueva Jerusalén described how his father, who had been healthy, began to feel pain in his kidneys: "He started to urinate blood, and then he died. My father was healthy [before that]."[142] Others told of their children dying after vomiting blood.[143] More investigation would be necessary to determine

whether any particular death was directly caused by oil contamination, but increased mortality is known to be an expected result of exposure to oil and other toxic chemicals.

## Results of blood-lead testing on Achuar children

Our medical team took a total of 73 blood samples in the five Achuar communities, of which 59 were from children; these samples were primarily tested for the concentration of lead.[144] ***Chart 1*** summarizes the blood-lead level test results of Achuar children in the five communities visited by the medical team.

As this chart indicates, *elevated lead levels were found in the children of every community, and in 25 of the 59 children tested.* A blood-lead level of 10 micrograms per deciliter (µg/dl) or greater is considered elevated,[145] but there is no demonstrated safe concentration of lead in blood.[146] Adverse health effects can occur at lower concentrations.[147] The average lead level in the communities was 10.14 µg/dl, with a range between 4.3 and 30.3 µg/dl. Four of the samples showed blood-lead levels higher than the 20 µg/dl level of concern established by WHO. [148]

Similar, or perhaps even more alarming, results were reported in a prior study by the Peruvian Ministry of Health. Sampling a total of seven different communities in a wider geographic area, including two of the five communities at issue here – José Olaya and Nueva Jerusalén – the government found that fully two-thirds of all children tested exceeded the 10 µg/dl level of concern.[149]

In comparison, the National Health and Nutrition Examination Survey, conducted by the U.S. Centers for Disease Control and Prevention (CDC), reported that in 2001–2002 the average blood-lead level in U.S. children was 1.45 µg/dL. The average blood-level for adults older than 20 years was 1.56 µg/dl.

A thorough environmental assessment regarding potential sources of lead and lead exposure was conducted with each patient and each community. Possible sources of lead (household utensils, travel, occupational exposure, and traditional medicine) were evaluated and ruled out. *The medical team concluded that no sources of lead exist that can account for such elevated blood-lead levels, other than the contamination arising from upstream oil operations.*

## Impacts of elevated blood-lead levels on the Achuar people

*Lead is a confirmed neurotoxin, which even in low levels leads to lowered IQ and abnormal cognitive development in exposed children. The impact of low-level environmental lead exposure on the health of the individuals is substantial.* Lead is found in crude oil and drilling mud, and its effects on human health from environmental contamination are well documented. Potential routes of exposure include contaminated soil, contaminated groundwater, and contaminated river water. Environmental lead exposure has been linked to an increased risk for numerous conditions and diseases, such as reading problems, school failure, delinquent behavior, hearing loss, tooth decay, spontaneous abortions, renal disease, and cardiovascular disease.[150] The evidence shows that these conditions or diseases are also associated with blood levels < 10 µg/dl.[151]

Chart 1 • Results of Blood-Level Analysis in Samples Taken from Achuar Children

| Community | Number Of Samples | Average Blood-lead Level | Blood-lead Level Range | Number Below 10 µg/dL Limit | Number Above 10 µg/dL Limit |
|---|---|---|---|---|---|
| All Communities | 59 | 10.14 µg/dl | 4.3–30.3 µg/dl | 34 | 25 (43%) |
| Pampa Hermosa | 4 | 15.70 µg/dl | 14.7–16.8 µg/dl | 0 | 4 (100%) |
| Saukí | 6 | 10.43 µg/dl | 6.5–14.1 µg/dl | 2 | 4 (57%) |
| Antioquía/Jíbaro | 11 | 14.84 µg/dl | 7.7–30.3 µg/dl | 1 | 10 (91%) |
| José Olaya | 16 | 8.46 µg/dl | 5.6–12.2 µg/dl | 12 | 4 (25%) |
| Nueva Jerusalén | 22 | 7.92 µg/dl | 4.3–12.2 µg/dl | 19 | 3 (14%) |

People, animals, and fish are mainly exposed to lead by breathing and ingesting it in food, water, soil, or dust. Once ingested, lead accumulates in the blood, bones, muscles, and fat. Infants and young children are especially sensitive to lead.

Members of the Achuar communities had previously described possible symptoms of lead exposure like gastrointestinal syndrome (anorexia, muscle aches, malaise, nausea, constipation, and abdominal pain) as well as neuromuscular symptoms (muscle weakness, fatigue, and neurodevelopmental delay).

A woman in her 40s from Pampa Hermosa testified to symptoms she has experienced:

> *I am sick, with pain in my stomach, in my vaginal area, and my kidneys; I have pain when I menstruate, as well as excessive bleeding. I also have pain when I urinate. My whole body hurts, and I have been losing weight.* [152]

A fellow community member from Pampa Hermosa, a man in his mid-30s, echoed her sentiment: "My stomach always hurts, and when I eat I feel like I'm about to fall. . . . [N]ow my body gets tired."[153]

"I suffer from rashes, tiredness . . . dizziness, nosebleeds," said a man in his early 40s from Pampa Hermosa,

> *my skin is numb and my body feels heavy and dead; my limbs fall asleep. . . . When I had diarrhea, vomiting, fever . . . I was examined by an Oxy doctor at Andoas, but the doctor didn't say the symptoms were from contamination; the doctor said the water was not contaminated. He gave me a pill and did not tell me anything else.*[154]

A man from Nueva Jerusalén said:

> *Six men have died from the contamination. One could not urinate, and his waist hurt. Another's intestines were all ruined; a little piece of his intestines came out in his excrement, and he died. Another started to get thin, and his stomach hurt also, and he died. I know that the contamination killed all of them because the water is bad.*[155]

Many community members interviewed complained about illnesses and physical difficulties suffered by their children: "My children are sick; they had diarrhea, vomiting, fever, they were cold and their stomachs hurt, they had vertigo and lost their vision. Two of my sons almost died."[156] A woman from Saukí said that "when the children bathe in the river and drink the water, they start to have diarrhea."[157] The Saukí schoolmaster commented to the team:

> *When I arrived here [in Saukí], my impression was that the children were slower, more delayed in their ability to understand and to converse. It was really difficult for the children to understand [their school lessons] when I first started teaching, and now I suspect that it might be due to the contamination, and [is] not the children's fault.* [158]

More comments on children's health came from a woman in her 40s from Saukí:

> *Three of my children have died. One child felt a pain in his side, couldn't breathe, and two days later he died. I have a six-year-old boy who also sometimes cannot breathe. Sometimes the children go to the river, and he [my son] coughs and sniffles. He comes out of the river with oil covering him. The children bathe in the river and come out with red eyes. . . . No one in my family has seen a doctor.* [159]

## Cadmium poisoning

Although our own medical team did not extensively investigate possible cadmium poisoning, the Peruvian government's prior results of cadmium testing are stark: in the seven communities tested by the government, including two of the communities visited by our team (José Olaya and Nueva Jerusalén), *all but two of the 199 people tested showed cadmium levels greater than the recommended concentration of .10 µg/dl.* This included every one of the 18 samples from José Olaya and the 32 samples from Nueva Jerusalén. In fact, all of the samples from these two communities were above the .20 µg/dl level commonly seen in smokers, and 32 of the 50 total samples exceeded .50 µg/dl, which the Ministry of Health characterized as the "biological limit of tolerance" for cadmium.[160]

Cadmium, like lead, is highly toxic, causes a range of health impacts, and is a known component of oil waste products such as produced waters. According to EPA, long-term exposure to cadmium causes damage to the kidneys, liver, bones and blood, including cancers; short-term exposure can cause nausea, vomiting, diarrhea, muscle cramps, salivation and, at high concentrations, liver injury, convulsions, shock and kidney failure.[161]

## Potential pathways of exposure to contamination

The medical team interviewed patients and the guardians of minor patients about the factors that might explain some of the observed health conditions. The two that were mentioned most often were the Achuar diet and their constant contact with the river.

The Achuar consume large quantities of fish whenever possible and rely on it as a key source of protein. "I get fish from the lake and the river," a man from Saukí in his late 20s told the team, "but both are contaminated. The meat is really hard. People eat the fish but they are full of chemicals. I eat the fish because I have no choice."[162] As noted in the environmental impacts discussion above, more than a decade ago a Peruvian institute founds that fish in the Corrientes region contained high levels of lead.[163]

The five Achuar communities use the Corrientes and Macusari Rivers for many purposes: bodily cleansing, washing clothes and dishes, traveling, fishing, and drinking. *Achuar contact with the rivers is direct, prolonged, and begins at an early age.* The medical team observed babies and children bathing in the river for extended periods.

Many individuals report spending at least one and up to more than four hours per day in contact with river water. Children generally use the river most, and are in the habit of spending four to six hours a day there during the summer. Attesting to the difficulty of finding alternatives to using river water, a woman form Pampa Hermosa told the team: "We stopped

*RIGHT: The Achuar depend directly on the daily and varied use of the Corrientes River, as demonstrated by these three Achuar girls washing themselves, their clothes, and dishes.*

Photos: Nathalie Weemaels

taking water from the river during Oxy's time, when we saw petroleum coming down the river. But we still drink the water if we are walking at midday, or if we are in the boat."[164]

## Achuar community healthcare

The communities of the Corrientes River basin depend primarily on the Trompeteros Health Network for their medical care.[165] In the expert opinion of the medical team, this system is insufficient to meet the needs of the communities for several reasons. Three health technicians for a population of at least 1,600 individuals in five communities spread over several hours' journey by river is simply inadequate. Neither Pampa Hermosa nor Nueva Jerusalén is equipped with its own transportation, and health technicians cannot easily reach the other communities in the event of an emergency. José Olaya, in particular, is a large and remote community that has no health care staff of its own. Although the community has a building designated for health care, it has no equipment and lacks even a basic first-aid kit.

Although Pluspetrol provides some medical and emergency assistance and transport, such assistance is sporadic, unpredictable, and insufficient to cover the needs of the communities. "I have never seen a doctor from Oxy or Pluspetrol," noted a woman in her mid-20s from Saukí who has a one-year-old daughter.[166] A man in his 30s from Jíbaro interviewed by the team complained about the lack of medical attention provided by the company:

> *When I lived in Antioquía, I asked Oxy for medicines, but Oxy did not want to give them to us. I spoke with Fernando Mora, Oxy's manager at Andoas, and asked for . . . medicine, but he did not assist us. . . . He said that the water was not contaminated, so people drank the water. The community monitors from Oxy also said that the water was not contaminated. . . . Oxy never sent a doctor to the community; in Oxy's time, the company wanted nothing to do with us*[167]


PHOTO: MARÍA LYA RAMOS

*Bare shelves at the Pluspetrol-provided health center at José Olaya.*

# PART III
# *Legal Framework*

## 1 • Overview

Oxy's activities in its concession in the northeastern Peruvian Amazon known as "Block 1AB" were not simply irresponsible – they were also clearly illegal. Oxy violated Peruvian law in a number of ways, including by discharging pollutants in the water and failing to use the best available environmental practices. Indeed, Oxy engaged in practices that were already known to be out-of-date by the 1970s, and continued those practices for 30 years. The contamination and other effects have also violated the internationally-guaranteed human rights of the Achuar people, including their rights to life, health, and a healthy environment, and their rights as indigenous peoples to participate in development decisions. Because Oxy is a U.S. corporation, Oxy's disregard for the law and for the well-being of the Achuar could subject it to legal liability in the U.S. as well as in Peru.

## 2 • Occidental's Practices in Achuar Territory Violated Industry Standards

Oxy did not conduct its oilfield pollution prevention practices in a manner consistent with regulations in the U.S., where Oxy is based, nor with state-of-the-art practices from the early 1970s, when Oxy's exploration and production (E&P) operations commenced in Block 1AB. *Oxy's decision to use sub-standard technologies has had severe consequences for the Peruvian Amazon's ecosystem and its inhabitants.*

Conclusions here are based on a comparison between Oxy's practices in Block 1AB, largely described in Part II, above, and the then-current state-of-the-art regulations and technology in the early 1970s. Three U.S. oil-producing states, Texas, California, and Louisiana, are used as benchmarks of the prevailing standards. Each was a major oil producer with well-developed regulations at the time Oxy began its operations in Peru, and Oxy would have been familiar with all of them. Texas standards are pertinent since Texas was the predominant U.S. oil-producing state at the time Oxy began operations in Peru. California standards are relevant in particular because Oxy was and is based in California. Indeed, even Oxy's Peruvian subsidiary, Occidental Peruana, is incorporated in California. Louisiana standards are relevant because Louisiana's climate and terrain conditions are comparable to that of Block 1AB.

By the 1960s and 1970s, oil and gas industry standards in place in the U.S. demonstrated a clear understanding that oil production operations are potentially harmful to the environment, and prescribed preventive measures. Two practices in particular – the use of unlined earthen pits for storage of oil wastes (including produced waters) and the discharge of produced waters directly into the environment – were closely regulated or banned entirely in the U.S. Oxy therefore both knew that these practices were harmful to the environment and human health and that they could be mitigated through designs and procedures that were routine in Oxy's U.S. operations.

*Oxy had been complying with regulatory standards that were protective of human health and the environment in its U.S. operations for many years prior to the commencement of operations in Block 1AB. Oxy simply elected to ignore these standards in Block 1AB. Oxy was unquestionably aware that the oil processing practices used in Block 1AB would have been in gross violation of the standards required in similar environments in U.S. oilfields where the company was operating at the time. The company was also fully aware of its obligations under Peruvian law to take appropriate actions to protect the environment.*

### Oxy's discharge of produced waters was prohibited by U.S. standards

Well before the 1970s, the oil-producing regions of the U.S. limited or prohibited entirely the practice of discharging produced waters onto land or surface

waters, reflecting the knowledge that this discharge was harmful to the natural and human environment. In Block 1AB, however, *Oxy discharged 850,000 barrels of produced waters directly into the environment on a daily basis*.

### *Louisiana*

By 1942 – 30 years before Oxy started operating in Block 1AB – Louisiana Statewide Order 29-A clearly required that "no salty produced water is allowed to run into natural drainage channels,"[169] effectively prohibiting the discharge of produced waters into inland freshwater areas. Order 29-A contains an unambiguous prohibition against the discharge of produced waters into inland freshwater, premised on the knowledge that saline-produced water has detrimental effects on the environment and human health. Moreover, the Louisiana regulation is particularly relevant to Block 1AB because of the two locations' similarities in climate and terrain.

### *Texas*

Similarly, by 1967 the Texas Statewide Oil & Gas Rules[170] required that operators take extensive steps toward protecting freshwater. Rule 8 of those Rules states unequivocally that "discharges of oil field brines and mineralized waters into a surface drainage water course, whether it be a dry creek, a flowing creek, or a river, except where permitted by the Commission, is not an acceptable disposal operation and is prohibited."[171] Rule 8 further requires that all wells must be maintained and closed such that "no pollution of any stream or water course . . . or any subsurface waters will occur as a result of the escape or release or injection of oil, gas, salt water, or other mineralized water from any well."[172] This Rule prohibits the discharge of produced waters on the ground or into surface waters.

### *California*

In California, too, stringent guidelines for discharge of produced waters were in place at least a decade before Oxy began production in Block 1AB. California oilfield discharge permits from the 1960s provide examples of restrictions on oilfields where fresh groundwater or surface water could be impacted. In these areas, the permits restrict the discharge of produced waters because of the likelihood that oil and gas operations would contaminate water used by humans and animals, even though that likelihood was smaller in the California production regions than in the Corrientes River basin.[173]

*In Block 1AB, of course, the produced waters were discharged directly into surface waters.* Oxy chose not to implement any safeguards, despite the fact that both the groundwater and surface waters were used for drinking by the local communities and the fact that surface waters were also used for swimming, fishing, and (during floods) watering crops.

The California permits specify that produced waters could only be discharged when the salinity of the water did not exceed 1,000 ppm of total dissolved solids (TDS), chloride levels did not exceed 175 or 200 ppm, and boron concentrations did not exceed 1 to 2 ppm. In Block 1AB, the three streams of produced waters that feed into the Corrientes River Basin – the Huayuri Battery on the Huayuri stream, the Dorissa Battery on the Pucacuro stream, and the Jibarito Battery on the Jibarito stream – far exceed the TDS and chloride criteria, yet Oxy discharged the produced waters directly into watercourses. Oxy's decision to discharge saline produced waters into surface waters in Block 1AB was made at a time when these same discharges would have not have been allowed in U.S. oilfields in similar situations exactly because it was known that such discharges would have harmful impacts on the environment and human health.

Chart 2 • Comparison of produced water TDS concentrations in Block 1AB[174] with 1960s California standards

| Block 1AB Tank Battery | Volume of Produced Waters (barrel/day) | TDS (ppm)* |
|---|---|---|
| **1960 California oilfield limits** | – | **1,000** |
| Huayuri | 95,000 | 64,000 |
| Dorissa | 45,000 | 100,000 |
| Jibarito | 170,000 | 58,000 |

** As a point of reference, the TDS level of seawater is approximately 35,000 ppm.*

### *Industry standards*

In addition to legal regulations, discharge of produced waters was strongly rejected by the industry publications of the time. For example, the 1978 American Petroleum Institute (API) vocational training manual for oil and gas operations states that "extreme care must be exercised in handling and disposition of produced water not only because of

possible danger to agriculture, but also because of the possibility of polluting lakes and rivers which provide water for drinking, as well as irrigation sources." The API manual goes on to explain that produced waters should be injected into underground formations. Oxy's methods of disposing of produced waters – passing them through unlined pits or discharging them directly onto the ground or into surface waters – clearly ignored the standard operating procedures being taught by API to new workers in the 1970s.[175]

***Reinjection was common and feasible***

The alternative to discharging produced waters is simple: reinjection. Reinjection technology involves reinserting produced waters into a saline aquifer deep in the earth using a non-producing oil well or a well specifically drilled for this purpose, effectively storing wastewater at a depth where it cannot contaminate potable groundwater. The technology for reinjection was well established long before the 1970s; for example, reinjection wells were drilled throughout Louisiana as early as the 1930s. Rule 9 of the Texas Rules makes clear that, by 1967, reinjection was the preferred method of disposal.[176] The API manual also clearly contemplates reinjection as the best practice. Nonetheless, *Oxy failed to reinject any produced waters in Block 1AB during the 30 years that it operated there.*

## Oxy's use of unlined earthen pits was prohibited by U.S. standards

As with the discharge of produced waters, the use of earthen pits for storage of toxic wastes and oil by-products was prohibited by prevailing U.S. standards well before Oxy began operations in the Corrientes River basin. Nonetheless, *in Block 1AB, Oxy used unlined pits dug directly into the ground, with no mechanism to prevent the overflow of pit contents into surface water or to prevent leaching into the groundwater.*

***Louisiana***

In Louisiana, Order 29-A of 1932 contained a general requirement, in Section VIII(E), that oil companies must avoid polluting surface waters and groundwater; this requirement effectively prohibited the use of unlined earthen pits, which are obviously susceptible to causing water pollution by leaching or overflow. Similarly, Section VIII(C.2) of the same order prescribed special protections for wetland areas, in which oil companies needed to use tanks on impermeable platforms protected by metal gutters for storing drilling fluids in order to prevent fires and pollution.[177] Although much of its concession consists of wetlands, Oxy never used such tanks and instead used unlined pits, despite the likelihood that they would and did overflow and leach.

***Texas***

Similarly, Texas Statewide Order No. 20-804[178], originally promulgated in 1939, clearly prohibited the use of earthen pits to store oil, its by-products, and its wastes:

> *No person engaged in the production, transportation, storage, handling, refining, reclaiming, processing, treating, or marketing of crude petroleum oil or the products or by-products thereof shall store, either permanently or temporarily, crude petroleum oil or the products and by-products thereof in open pits or earthen storage.* [179]

## Conclusion

*Oxy was aware of – and accustomed to complying with – regulations, performance standards, and permit conditions that were protective of human health and the environment in the U.S. at the time it began operations in Block 1AB in 1975.* These U.S. regulations and industry standards demonstrated a clear and unambiguous understanding that E&P operations are harmful to the environment and that certain protective measures must be implemented. Oxy's use of unlined pits and the direct discharge of produced waters in Block 1AB would have been illegal under the prevailing laws in U.S. oil-producing states at the time. An interviewee in his early 60s from Nueva Jerusalén put it simply: "There was no regulation in Oxy's time."[180]

*It is reasonable to conclude that Oxy* ***knowingly*** *used sub-standard technology and* ***knowingly*** *endangered the environment and human health, given the extensive health and environmental regulations with which it was complying in the U.S. even before commencing with its operations in Peru. Had Oxy implemented the pollution prevention practices in Peru that it followed at its U.S. oilfields in 1975, the company would have largely avoided the human health and environmental damage caused in Block 1AB under Oxy's stewardship.*

## 3 • Occidental's Operations Violated International Law

The harms to the Achuar people from the oil operations in Block 1AB additionally violate several well-established principles of international human rights law. Peru is a party to several major human rights treaties, including the International Covenant on Civil and Political Rights (ICCPR), the International Covenant on Economic, Social, and Cultural Rights (ICESCR), the American Convention on Human Rights, the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social, and Cultural Rights (also known as the Protocol of San Salvador), and the International Labor Organization's (ILO) Convention (No. 169) Concerning Indigenous and Tribal Peoples in Independent Countries. In addition to these treaties, the Peruvian government, as well as Oxy itself, is also bound by the provisions of customary international law.

> *The protection of the environment is . . . a vital part of contemporary human rights doctrine, for it is a sine qua non for numerous human rights such as the right to health and the right to life itself. It is scarcely necessary to elaborate on this, as damage to the environment can impair and undermine all the human rights spoken of in the Universal Declaration [of Human Rights] and other human rights instruments.*[181]
>
> –Judge Weeramantry of the International Court of Justice

### Violations of international human rights law

***The right to life***

The right to life is one of the most basic universal human rights, guaranteed by Article 6 of the ICCPR and Article 4 of the American Convention and a fundamental principle of customary international law. In analyzing a similar situation of environmental pollution in the Ecuadorian Amazon, the Inter-American Commission on Human Rights (IACHR) explained that the right to life is not "limited to protection against arbitrary killing":

> *Human exposure to oil and oil-related chemicals, through the skin or ingested in food or water, or through fumes absorbed via the respiratory system, has been widely documented to cause adverse effects to human health and life. . . . Respect for the inherent dignity of the person is the principle which underlies the fundamental protections of the right to life and to preservation of physical well-being. Conditions of severe environmental pollution, which may cause serious physical illness, impairment, and suffering on the part of the local populace, are inconsistent with the right to be respected as a human being.*[182]

In this case, the evidence that oil contamination in Block 1AB has caused or contributed to multiple deaths presents a clear violation of the right to life.

***The right to health***

The right to health is guaranteed by Article 12 of the ICESCR, which protects "the right of everyone to the enjoyment of the highest attainable standard of physical and mental health," and by Article 10 of the Protocol of San Salvador, which guarantees "the enjoyment of the highest level of physical, mental, and social well-being"; similar language also appears in Article 25 of ILO Convention No. 169. Like the right to life, the right to health is clearly implicated by environmental degradation that affects human health. The Committee on Economic and Social Rights, which interprets the ICESCR, has noted that the right to health does not merely encompass access to health care, but also "extends to the underlying determinants of health, such as food and nutrition, housing, access to safe and potable water and adequate sanitation, safe and healthy working conditions, and a healthy environment."[183] In this case, evidence that the oil contamination may have contributed to a number of health problems, including possibly widespread lead poisoning and contamination of food sources, implicates the right to health of the Achuar people.

***The right to an adequate standard of living and to subsistence***

The ICESCR guarantees, in Article 11, "the right of everyone to an adequate standard of living," including "continuous improvement of living conditions," and also provides, in Article 1, that no people may be "deprived of its own means of subsistence." Additionally, Article 23 of the ILO's Convention No. 169 requires that "subsistence economy" activities of indigenous peoples, such as "hunting" and "fishing," be protected. These rights are implicated by the fact that the Achuar communities' ability to produce

food – including by hunting and fishing – have been detrimentally affected by the oil contamination.

***The right to a healthy environment***

In addition to the impact on human health, international law recognizes the right of peoples to live in a healthy environment and an obligation to protect the environment. This right is explicitly recognized in Article 11 of the Protocol of San Salvador, which also requires governments to "promote the protection, preservation, and improvement of the environment," and in Article 7 of ILO Convention No. 169, which requires the protection and preservation of "the environment of the territories" of indigenous peoples. It is also recognized in instruments such as the 1992 Rio Declaration on Environment and Development, which proclaims that states should protect the environment as part of a process of sustainable development,[184] and the 1972 Stockholm Declaration of the United Nations Conference on the Human Environment.[185] *The impact of Oxy's activities, including the failure to remediate contaminated sites, spills of crude oil, and the regular discharge of oil production wastewater, has violated the right to a healthy environment and the obligation to protect the environment.*

***Freedom from discrimination and the right to equality***

Freedom from discrimination and the right to equality are core elements of the international human rights regime; equality and the prohibition of discrimination is enshrined in Article 26 of the ICCPR, Article 24 of the American Convention, Article 2 of ILO Convention No. 169, and in other instruments such as the Convention on the Elimination of All Forms of Racial Discrimination, to which Peru is also a party. The right to equality is violated in an environmental pollution case if one of the factors leading to the pollution is the race or ethnicity of the people affected. One U.S. federal court, for example, found that it would violate international law for a mining company to engage in environmental degradation in part due to the company's belief that the affected population was racially and culturally inferior.[186] The fact that Oxy engaged in polluting practices in Peru that the company had long discontinued in the U.S., where Oxy is based – despite the fact that these practices violated Peruvian law – suggests that Oxy consciously took advantage of the indigenous Achuar communities. If Oxy viewed the Achuar as powerless because of their race and ethnicity, the environmental contamination that resulted also constitutes discrimination and a violation of the right to equality.

***Indigenous peoples' rights***

While individuals belonging to indigenous groups are entitled to all of the rights discussed above, international law also provides guarantees specifically tied to indigenous peoples' heritage and ancestral use of their land – as per ILO Convention No. 169, "special measures" must be taken to safeguard the rights of indigenous peoples (Article 4). Among other things, ILO Convention No. 169 generally requires consultation with indigenous groups before taking action that may affect them (Article 6), and that indigenous peoples be entitled to participate in the processes of development, including planning, impact studies, control, and follow-up on the activity (Article 7). It also requires respect for the ancestral lands of indigenous peoples and for their ownership rights (Article 14), and protection of the rights of indigenous peoples to use and conserve their natural resources (Article 15). The Achuar people were not afforded these rights with respect to Oxy's operations in Block 1AB; *from the beginning, they were not consulted in the manner required by ILO Convention No. 169 and by the customary international law of indigenous peoples, and the oil development and contamination affected their use of their own lands as well as their ability to use their natural resources.* In short, the Achuar had no say in activities that would severely inhibit their ability to live by their traditional and historic means of subsistence.

## The responsibility of Peru and Oxy

Both the Peruvian state and Oxy itself bear responsibility for these violations of international law. International human rights obligations typically fall primarily on states, and states are obliged to ensure that people under their jurisdiction – especially historically vulnerable populations such as indigenous peoples – are protected from harm. Increasingly, international law also recognizes the responsibility of corporations to respect internationally-guaranteed rights.

***The government's responsibility to protect***

The responsibility of states to protect individuals from violations of their rights is a well-established principle in international law. The duty to protect appears explicitly in some treaties; Article 2 of ILO

Convention No. 169 requires governments to develop systems to "protect the rights of these [indigenous] peoples," Article 4 of the American Convention requires that the right to life be "protected by law," and Article 2 of the Protocol of San Salvador provides that governments must enact legislation to protect the rights enumerated. Furthermore, interpreting bodies such as the IACHR have explained that the duty to protect is a general duty; in its report considering oil contamination in the Ecuadorian Amazon, the IACHR noted that Ecuador "must ensure that measures are in place to prevent and protect against the occurrence of environmental contamination which threatens the lives of the inhabitants of development sectors."[187] In a similar case involving oil contamination in Nigeria, the African Commission on Human and Peoples' Rights noted that

> *Internationally accepted ideas of the various obligations engendered by human rights indicate that all rights . . . generate at least four levels of duties for a State that undertakes to adhere to a rights regime, namely the duty to respect, protect, promote, and fulfil these rights. These obligations universally apply to all rights and entail a combination of negative and positive duties. . . . [The obligation to protect] requires the State to take measures to protect beneficiaries . . . against political, economic, and social interferences.* [188]

The African Commission concluded that, by failing to protect the people from oil pollution caused by a multinational corporation, the Nigerian government had failed in its obligation to protect human rights.[189] Similarly, the Peruvian government has failed in its obligation to protect its people, including the Achuar, from violations of their rights. Although much of Oxy's conduct may have violated Peruvian law, the Peruvian government has not enforced the laws that might have protected the Achuar. Nor did the Peruvian government require Oxy to consult the Achuar communities before engaging in its oil development. By allowing these violations to occur, the Peruvian government has failed to live up to its international obligations.

***Oxy's responsibility to respect international law***

Although the primary obligations of international law have always fallen to states, private actors such as corporations, especially large multinational corporations, are also responsible for respecting international human rights law. For example, the Universal Declaration of Human Rights (UDHR), promulgated in 1948, calls upon "every organ of society" to respect human rights, and the Stockholm Declaration noted that protection of the environment requires "acceptance of responsibility by citizens and communities and by enterprises and institutions at every level."[190] More recently, in 2003, the United Nations Sub-Commission on the Protection and Promotion of Human Rights approved the Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises With Regard to Human Rights. The U.N. Norms, which are considered an authoritative interpretation of international law on this subject, expressly provide that

> *within their respective spheres of activity and influence, transnational corporations and other business enterprises have the obligation to promote, secure the fulfillment of, respect, ensure respect of, and protect human rights recognized in international as well as national law, including the rights and interests of indigenous peoples and other vulnerable groups.* [191]

In particular, the U.N. Norms also provide that multinationals must respect "relevant international agreements, principles, objectives, responsibilities and standards with regard to the environment as well as human rights . . . and shall generally conduct their activities in a manner contributing to the wider goal of sustainable development."[192]

*In Oxy's operations in Peru, instead of respecting the international guarantees for life, health, and healthy*

In Oxy's operations in Peru, instead of respecting the international guarantees for life, health, and healthy environments, the company carried on with its polluting activities for decades. Oxy therefore must share responsibility with the Peruvian state for these violations of international law.

*environments, the company carried on with its polluting activities for decades. Oxy therefore must share responsibility with the Peruvian state for these violations of international law.*

## 4 • Occidental's Activities Violated Peruvian Law

Individuals' and indigenous communities' rights to a healthy environment, health, and property were violated by Oxy's oil operations in Block 1AB. Oxy's operations are located on indigenous territory and negatively impacted the natural resources on which Achuar communities depend for their subsistence.

### Violations of constitutional rights

Like international law, the Peruvian Constitution recognizes a number of fundamental rights that were not respected in Oxy's operations. Article 2.1 of the Constitution protects the right to life, physical integrity, well-being, and freedom to develop; Article 2.2 safeguards the right to equality; Article 2.22 protects the universal right to enjoy a stable environment adequate for life development; and Article 7 enshrines the right to health. Oxy's polluting activities violated these rights in the same way as the similar rights guaranteed by international law.

### Peruvian General Health Law

Oxy's operations also violated more specific provisions of individual Peruvian laws. The Peruvian General Health Law (Law 26842) prohibits the endangering or damaging of the health of third parties.[193] As documented in this report, there is little question that Oxy's activities, and the continuing operation of the facilities built by Oxy, endanger the health of the Achuar communities. The General Health Law also requires the use of sanitary practices to prevent the spread of environmental contamination;[194] again, Oxy failed to do so. Finally, the General Health Law specifically prohibits the dumping of waste or contaminants in the water, air, or soil without having first adopted appropriate purification measures necessary to protect human health and the environment.[195] Through its improper storage of waste, periodic spills, and intentional discharge of massive quantities of pollutants, Oxy violated this prohibition.

### Peruvian General Water Law

The Peruvian General Water Law (Decree 17752) and its accompanying regulation, Supreme Decree 261-69-AP, establish prohibitions and obligations for water use and conservation. The following specific provisions of the law were violated by Oxy:

- Article 14: Prohibits the altering of established forms of use or the nature or quality of water, or of riverbeds used by the public without appropriate authorization. Oxy's activities degraded the quality of numerous waterways in the Corrientes River basin.
- Article 12: Requires the implementation of necessary measures to prevent or minimize negative social, cultural, economic, and health impacts on local communities. Oxy did not undertake measures to protect human health that were standard in the United States.
- Article 20: Requires water users to construct and maintain installations in good condition for water use and sanitization. Oxy completely failed to do so.
- Article 22: Prohibits dumping or emitting any waste that has the potential to contaminate water and/or endanger human health or the normal development of flora and fauna. Waste can be discharged only when it is first subjected to the necessary treatment; and it can be shown that the receiving unit allows for natural purification processes.[196] Oxy plainly did not do so; it both dumped waste on land that had the potential to contaminate the water and discharged waste directly into the water.
- Dumping waste in the sea or fresh waters is prohibited without prior approval from the Health Authority.[197] All waste destined for dumping in the sea or fresh waters must go through prior treatment, submarine dumping, or adequate distancing, and must possess the appropriate license.[198] Again, Oxy did not undergo the necessary treatment or licensing for its waste dumping.

### Environmental protection in the hydrocarbon sector

The 1993 Regulation for Environmental Protection for Hydrocarbon Activities[199] establishes legal regulations and concrete obligations for all phases of extractive

activity to ensure that they do not produce negative social or environmental impacts. Oxy has violated this Regulation, causing severe harm to the indigenous population.

Individuals and entities conducting hydrocarbon activities are responsible for any contamination those activities produce and must avoid adverse environmental effects of substances, emissions, waste, or contaminants that are produced by their installations. *Oxy directly discharged produced waters without transfer systems, contaminating rivers and lakes used for human consumption and agriculture, as well as smaller streams which did not have the capacity to dilute the contaminants.*[200]

The company systematically violated the regulations related to the management and storage of hydrocarbons[201] through the use of open, unlined oil storage pits and the lack of drainage systems, dikes, or other measures for containment, channelling, or treatment of contaminants adequate for high rainfall climates. Oxy's failure to both implement these measures and comply with treatment systems and quality-control limits included in the General Water Law for liquid waste and residual waters led to the contamination of surface water bodies as well as subterranean aquifers.

> The general principle that anyone subject to U.S. jurisdiction – including U.S. corporations – may be sued in the U.S. for wrongs they commit abroad has been recognized for centuries.

Oxy violated prohibitions on hunting and fishing activities, as well as collecting animal and plant species. During the exploration phase and felling of trees and vegetation for the opening of ditches, Oxy constructed ditches much wider than the permitted two-meter maximum width. Additionally, Oxy cut commercially valuable species and plants that were useful or sacred to the Achuar communities. Oxy's activities also scared away fauna and introduced new diseases to which the Achuar had no natural immunity.[202]

During seismic testing and subsequent use of explosives, Oxy violated prohibitions against detonating loads at less than 15 meters' distance from surface waters used for human consumption, or prohibitions against such activities close to homes. In many cases, Oxy moved earth in soils prone to erosion or on softly sloping terrain. This produced pools, swelling of streams, and the creation of breeding grounds for malaria-bearing mosquitos.[203]

### Crimes against the environment

Oxy carried out activities that constitute environmental contamination crimes detailed in Title XIII, Article 304 of the Peruvian Criminal Code (PCC).[204] The PCC forbids the dumping of potentially contaminating liquid wastes into the environment, fresh water, and water meant for human consumption. Oxy discharged such wastes without prior analysis of the receiving bodies of water, without prior treatment, and in excess of maximum permitted levels of discharge. This was aggravated by the fact that Oxy discharged the wastes clandestinely, without an emission authorization.

In November 1996, R.D. 030-96-EM/DGAA was approved and set out the maximum permissible limits for liquid effluents (Appendix C).[205] Oxy's own audit reports, carried out between July 1998 and June 1999, provide proof that Oxy exceeded the permissible limits for some of these indicators. [206]

The character of continuing harm, as described in Article 49 of the PCC, can be deduced from the continued violation of a given criminal norm over an extended period of time, excluding any accidental situation. Even after Oxy transferred Block 1AB to the Argentine company Pluspetrol in 2000, the dumping of toxic substances into the environment and surface water bodies has continued.

Oxy's harmful behavior is evidenced by the fact that *the company knew of and understood the existing norms as well as the danger posed by the direct dumping of toxins surpassing permissible limits, and yet the company chose to violate those norms*. The aggravating factors of endangering human health and property, Oxy's clandestine behavior, and the severe effect on the natural resource base constitute crimes against the environment (Article 305 of the PCC).

## 5 • Occidental's Conduct Leads to Legal Liability in the United States

Because Oxy is a U.S. corporation, its actions in Peru violate U.S. law as well as Peruvian law, and potentially expose the company to liability in U.S. courts. The general principle that anyone subject to U.S. jurisdiction – including U.S. corporations – may be sued in the U.S. for wrongs they commit abroad has been recognized for centuries. Several U.S. corporations have been sued for causing environmental and public health harms in other countries, especially in Latin America.[207]

Oxy's knowing use of sub-standard technology and willful endangerment of the environment and human health in Block 1AB may subject the company to liability in a variety of ways, requiring Oxy to compensate the victims of its irresponsible conduct and clean up its mess.

*The most basic element of a case against Oxy would be negligence or recklessness.* The legal concept of negligence provides that anyone who does something unreasonable and which results in harm to another is liable for compensation and corrective action. In this case, releasing oil and toxic chemicals directly into the environment at a time when those practices were prohibited in the U.S. was clearly unreasonable. Additionally, Oxy's conduct could be said to be reckless because Oxy officials knew that the company's actions could cause adverse effects on the environment and human health, but still refused to take proper precautions. The company could also be held responsible for its continuing negligence because it negligently designed and built systems that Pluspetrol continues to operate today, even after Oxy's departure.

*Oxy would also be liable for injuries to the land of the Achuar, including legal claims such as trespass and nuisance.* A trespass claim can be brought for any intrusion onto Achuar land, including intrusion by oil and toxic chemicals. A nuisance claim arises from Oxy's use of the land in a way that unreasonably harms the Achuar people's use of their lands.

*The health impacts of Oxy's operations might also subject the company to liability for battery, by issuing substances that cause bodily harm to the Achuar.* To the extent that the company lied about the effects of operations or the cleanliness of the water in the Corrientes River basin, Oxy could be liable for fraud.

Finally, if Oxy is found responsible for causing these harms, there are at least two kinds of legal remedies that the courts could order. The first is money damages to compensate the victims, which could range into the millions of U.S. dollars. Lead poisoning cases in the U.S., for example, often result in damages of up to US$1 million or more for each child affected. Even more significant is the possibility of an injunction to clean up the contamination, or, if that is not possible, an award of money damages sufficient to fund a cleanup. Cleaning up bodies of water often costs many millions of dollars, but this is the only way that the Achuar communities can be sure that they will not continue to suffer from the effects of contamination.

# CONCLUSIONS & RECOMMENDATIONS

The findings above confirm the profound environmental and social impacts left in the wake of Occidental Petroleum Corporation's 30-year presence in the northeastern Peruvian Amazon. The company's refusal to apply then-current oil industry best practices in its Peruvian operations produced foreseeable environmental destruction and long-lasting health problems in the native communities. Oxy prioritized profits over all other considerations and its willful disregard for the rights, lives, and homelands of the Achuar people leave the company vulnerable to legal action in the United States. Oxy has displayed a gross disrespect for the role of corporate citizenship, the needs of local communities, and the ecosystems on which they have traditionally relied for their survival. As one interviewee from Antioquía stated:

> *We have to denounce Oxy because the company contaminated the area. Thirty years ago it wasn't like this. . . . For many years Oxy was here, and the company left the place totally contaminated, the animals, the river, the fish.* [208]

For the Achuar people who continue to live with the daily impacts of Oxy's operation, it is imperative that Oxy assume its responsibilities under the laws of the U.S., Peru, and international conventions and treaties.

*Although Oxy's activities in the Corrientes extend back over 30 years, they remain relevant today because the people of the affected communities continue to live with the effects of Oxy's legacy of harm.* Oil production in Peru continues to occur in a permissive political environment in which regulatory agencies do not adequately enforce compliance with the law, or ensure that the companies use the best-available technology and environmental practices. If the companies are not reined in, the entire Peruvian Amazon could come to resemble Block 1AB, littered with human rights abuses, degraded environmental and human health conditions, and oil spills a routine sight.

Photo: María Lya Ramos

*Achuar father with his two children in village of Saukí.*

## Recommendations

In light of the findings above, EarthRights International, Racimos de Ungurahui, and Amazon Watch make the following recommendations to begin to resolve and ultimately eliminate these harms:

***To Occidental Petroleum***

Occidental Petroleum was clearly at fault for three decades of heedless disregard of industry best practices, U.S. and Peruvian law, and international human rights standards in its operations in Peru. *Oxy must immediately begin to undo the many years of wrongs* it visited upon the Achuar people and their physical environment:

- *Clean up the mess:* Oxy must remediate the contamination caused by its activities, including reforestation, cleaning of waterways, remediation of contaminated sediments, and removal of toxic wastes either offsite or to permanent, impermeable tank storage onsite.
- *Stop the ongoing contamination:* Oxy must work with Pluspetrol and, if necessary, provide financial resources to redesign and reengineer systems built by Oxy that continue to pollute the environment, most importantly eliminating all discharge of produced waters.
- *Provide financial compensation to the thousands of Achuar victims* who have suffered profound harms, both directly and indirectly, to their physical health, the ecological integrity of their land and resources, and the damage done to their traditional lifestyle, culture, and standard of living.
- *Ensure access to modern healthcare for the communities affected by its malfeasance,* in order to prevent, diagnose, and treat any medical conditions to which Oxy has contributed and/or created over the years, including well-located public health centers that are fully staffed and stocked; hospitals in larger population centers; and emergency transport available for communities that are far away from the centers and hospitals.

While it is of the utmost importance for Oxy to indemnify affected victims and remediate the ecosytems degraded by its activities, *we also call on Oxy to institute new practices for its ongoing and future operations*, both in Peru and other countries in which it operates. We call on Oxy to:

- *Comply with its own human rights policy* from December 2004,[209] and adopt the internationally accepted principle of not working in any areas where it does not obtain Free, Prior, and Informed Consent (FPIC).[210] Oxy must bring indigenous communities into the discussion of matters related to the development of their land and resources as full and equal partners before taking any step onto their territories.
- *Commit to using best-available pollution control technology in its worldwide operations,* not just in countries such as the U.S. where enforcement is relatively strong.

***To Pluspetrol***

While Oxy bears primary responsibility for the harm to Achuar communities, Pluspetrol is at fault for continuing to use Oxy's physical infrastructure and production methods – even though these have been shown to clearly violate Peruvian law and international human rights standards. Pluspetrol should therefore:

- *Institute industry best practices and full reinjection* in its operations in Block 1AB and comply in full with the historic accord it signed with the Peruvian government and Achuar people in October 2006 which requires Pluspetrol to reinject all produced waters by July 2008.
- *Cooperate with Oxy to remediate the environment* for its contribution to the contamination of Achuar territory since 2000. Although Oxy should bear the burden of cleaning up the waste that it left behind, Pluspetrol should cooperate with Oxy in doing so.
- *Provide financial compensation to the victims* who have suffered profound harms, both directly and indirectly, to their physical health, the ecological integrity of their land and resources, and the damage done to their traditional belief systems, culture, and standard of living.

***To the Peruvian Government***

While Oxy's activities in Block 1AB clearly violated Peruvian law as well as accepted oil industry standards, its contamination was made possible in part by the failure of the Peruvian government to enforce its own laws. The Peruvian government failed in its responsibility to protect the Achuar from environmental harm and to respect their right, as indigenous peoples, to participate fully in development decisions. Thus, the Peruvian government should take the following measures:

- *Enforce environmental laws:* Oil companies operating in Peru should not be able to pollute at will without consequences. Peru must aggressively enforce its environmental laws and shut down any oil operations that threaten environmental contamination, and in particular must ensure that Pluspetrol makes necessary improvements to its operations in Block 1AB. Enforcement should include prosecution of past and current offenders.

- *Enforce the applicable laws related to the recognized rights of indigenous peoples in* ILO Convention No. 169, particularly regarding hydrocarbon activities on their territories.
- *Safeguard FPIC:* Peru's obligations under international law require it to allow all indigenous peoples to decide whether, and how, they want to allow development in their traditional territory, including oil production. Peru must ensure that this consent is obtained freely, and should engage in the informed consent process before granting concessions to oil companies.
- *Compel Oxy and Pluspetrol to clean up the Corrientes River basin:* Peru has the authority and the obligation to force Oxy and Pluspetrol to clean up their mess. The costs of such a cleanup should be borne primarily by Oxy and secondarily by Pluspetrol, but the Peruvian government should make sure that it happens.
- *Ensure access to health care:* Although Oxy and Pluspetrol should provide substantial funding for health care to the affected communities, the Peruvian government must ensure that health care facilities are built and maintained, and that the Achuar are not dependent on company doctors and facilities in perpetuity.

We stand in solidarity with the Achuar people in their demands for respect of their human rights and protection of the environment. We echo the words and assertion of this woman from José Olaya:

> *Oxy has contaminated our territory and it should pay. Oxy should not be able to say it has not contaminated us. All of these injuries that they have caused – they should pay us for this. Before Oxy came, everyone grew up healthy; I grew up before Oxy [arrived here] and the area was clean. But now our children are skinny; we used to feed them well, but now with this contamination, you cannot bring up healthy children.*[211]

# APPENDIX A
## *Corrientes Mission Participants*

**Gonzalo Paima Carijano**, born in the native community of Nueva Jerusalén, has held various positions of leadership in his community. He was most recently the vice president of FECONACO (2005-2006) and is currently serving as town councilor in the municipality of Trompeteros.

**Nils Henning** serves as an assistant professor in the Department of Community and Preventive Medicine at Mt. Sinai Medical Center in New York. He holds a Master's in Public Health from Mount Sinai School of Medicine and a Ph.D. from the University of Cologne, Germany. He is certified by the American Board of Pediatrics, and holds a New York State Medical License and a German Medical License. He has worked with Doctors Without Borders in the U.S., Uganda, Ethiopia, Sierra Leone, Angola, Afghanistan, and Liberia. He has provided medical expertise and support to hospitals in Brazil and worked with the World Health Organization on a malaria study project in Sierra Leone.

**Geanina Lucana** is a registered nurse in Peru and forms part of the newly-established Corrientes River Basin Special Health Team to monitor the implementation of the accords between Pluspetrol and the Peruvian government following the October 2006 Achuar takeover of Oxy's installations. She has been working with indigenous communities in the northern Peruvian Amazon for the last six years. She has a nursing degree from the Peruvian Department of Medicine at the Universidad Nacional Mayor de San Marcos.

**Meghan Morris** is currently a student at Harvard Law School and The Fletcher School at Tufts University, concentrating on human rights and international environment and resource policy. Before beginning graduate school, she lived in the Ecuadorian Amazon and worked on research and campaigns related to the oil industry's effects on indigenous communities. She has worked with EarthRights International since 2005 on legal research and advocacy for indigenous communities in the Corrientes region.

**Bill Powers** is the chief engineer of E-Tech International in California and the principal of Powers Engineering. He is a registered mechanical engineer in California. His project work focuses on emission control technology assessments for new and existing industrial sources, principally in the power generation, petroleum, aluminum, and copper sectors. Bill has nearly 25 years of experience in oil field pollution control, combustion emissions control, and industrial pollution sources. He holds a Bachelor's degree in mechanical engineering from Duke University and a Master's degree in environmental science from the University of North Carolina, Chapel Hill. He designed and led an extensive contaminant measurement program in California in the 1990s and has served as an instructor of oilfield contaminant control for technical staff of Petróleos Mexicanos.

**María Lya Ramos** is the Southern Amazon program coordinator at Amazon Watch, where she focuses on Peruvian hydrocarbon concession impacts on indigenous communities. Prior to Amazon Watch, Maria was national field organizer with Greenpeace USA, where she trained and mobilized community members and university students on climate change, toxics, and genetic engineering issues. Previously, she headed the Washington Peace Center, a clearinghouse and resource center for nonviolent social change. She holds a Master's degree in international development from The George Washington University and is a native Spanish speaker.

**Benjamin Schonbrun** is a founding partner of Schonbrun, Desimone, Seplow, Harris & Hoffman LLP. The firm has represented numerous plaintiffs in sexual harassment, race discrimination, wrongful termination, pregnancy discrimination, and disability discrimination, resulting in settlements in the hundreds of thousands and millions of dollars. Benjamin has 20 years of litigation experience, with a specialty in civil rights law. He holds a J.D. from the University of West Lost Angeles School of Law and is admitted to the bar in California.

**Marco Simons** is legal director at EarthRights International (ERI). Prior to ERI, he clerked for the Honorable Dorothy Wright Nelson on the U.S. Court of Appeals for the Ninth Circuit. He then worked for Hadsell & Stormer, Inc., a Pasadena civil rights law firm, which was co-counsel with ERI on *Doe v. Unocal* and *Bowoto v. Chevron*. He also served as Communications Director for the campaign of Ro Khanna for U.S. Congress in California's 12th District, and has taught human rights law at Occidental College in Los Angeles. Marco holds a J.D. from Yale Law School and is admitted to practice in California, Washington, DC, and Washington State.

**Lily La Torre López** is founder and executive director of the Lima-based NGO Racimos de Ungurahui. She is a member of the legal advisory team of the National Legal Defense Program of Amazon Indigenous Organizations in Peru, the Interethnic Association for Development of the Peruvian Jungle (AIDESEP), and member of the international network Environmental Law Alliance Worldwide (E-Law). Lily is legal advisor to Achuar, Quichua, and Urarina communities of the Corrientes River Basin. She has over 20 years of experience providing counsel and training to indigenous federations at the local and national levels on legal issues related to the exploitation of natural resources of the Amazon forest by national and international companies, and the environmental and social impacts resulting from these activities on indigenous lands. Lily has degrees in law and philosophy from the Pontificia Universidad Católica del Perú.

**Adam Walters** is a chemist by training. He is currently a consultant scientist with the Greenpeace Research Laboratories at Exeter University in the U.K. He has worked and written on a diverse range of issues, including the environmental impact of production on the electronics and textiles industries, marine pollution, the toxicology of chemical pollutants, chemicals policy, and the philosophy of chemistry. He also has experience monitoring environmental contamination and in laboratory analysis.

**Nathalie Weemaels** is an engineer in tropical agriculture. She holds a Master's degree in Tropical and Sub-tropical Agricultural Engineering from Belgium's Faculté des Sciences Agronomiques de Gembloux. She has worked with several Ecuadorian and international NGOs, monitoring social and environmental impacts of oil and other extractive industries in Amazonian countries. For the last 20 years, Nathalie has been actively supporting indigenous communities in their struggle for the respect of their rights. She is currently working as a freelance consultant on the lawsuit against Texaco in Ecuador. Nathalie is a Belgian national and has been living in Ecuador for the last 15 years.

# APPENDIX B

## Excerpts from a May 2006 study carried out by the Peruvian Ministry of Health (DIGESA) entitled:

"Intrasectoral Commission for the Prevention and Mitigation of Lead and Other Heavy Metals Contamination: Fact-finding Trip to Communities in the Corrientes River Basin to Evaluate the Sanitary Quality of the Hydrous Resources and Biologic Samples"

### PERUVIAN GOVERNMENT WATER SAMPLING RESULTS

| No. | Location | Conductivity (µS/cm) | Hardness (mg CaCO3/L) | TDS (mg/L) | Clorides (mg Cl-/L) | Fats & Oils (mg/L) | TPH (µg/L) |
|---|---|---|---|---|---|---|---|
| 4313/AC6 | Quebrada Jose Olaya, 100m upstream from confluence with Corrientes | 66.6 | <LD (20) | 84 | <LD (2.0) | – | – |
| 4325/ AS12 | Rio Corrientes, 3km upstream from Jose Olaya | 22.0 | – | – | 2.2 | <LD (1) | <LD (0.05) |
| 4326/ AS13 | Rio Corrientes, 100m below Quebrada Jose Olaya | 951.0 | – | – | 296.5 | <LD (1) | <LD (0.05) |
| 4327/ AS14 | Quebrada Toeyacu (near Teniente Lopez), 30m before confluence with Corrientes | 40.0 | – | – | <LD (2.0) | <LD (1) | – |
| 4328/ AS15 | Rio Macusari, at Puente Macusari (upstream of Nuevo Jerusalen) | 26.0 | – | – | 2.2 | <LD (1) | <LD (0.05) |
| 4329/AS16 | Quebrada Huayuri, 100m below discharge from Huayuri Battery | 1827 | – | – | 575.9 | <LD (1) | <LD (0.05) |
| 4330/AS17 | Quebrada Huayuri, 100m above discharge from Huayuri Battery | 13.3 | – | – | 5.9 | <LD (1) | <LD (0.05) |
| 4331/ AS18 | Quebrada Pucacuro, 100m below discharge from Dorissa Battery | 12400.0 | – | – | 4361 | 3 | <LD (0.05) |
| 4332/ AS19 | Quebrada Pucacuro, 100m above discharge from Dorissa Battery | 182.5 | – | – | 53.7 | <LD (1) | <LD (0.05) |
| 4333/ AS20 | Quebrada Pucacungayacu, 100m below discharge from Jibarito Battery | 11140.0 | – | – | 3939 | <LD (1) | <LD (0.05) |
| 4334/AS21 | Quebrada Pucacungayacu, "altura captación de agua Jibarito" | 50.8 | – | – | <LD (2.0) | <LD (1) | <LD (0.05) |
| 4342/ V6 | Huayuri Battery discharge | 128600.0 | – | – | 68186 | 20 | 11.45 |
| 4343/V6A | Quebrada Huayuri residual waters | 32000.0 | – | – | 12905 | – | – |
| 4344/ V7 | Dorissa Battery discharge | 170100.0 | – | – | 104460 | 2 | 9.20 |
| 4345/ V8 | Jibarito Battery discharge | 117600.0 | – | – | 61098 | 9 | 9.76 |

### WATER QUALITY STANDARDS

| Source | Conductivity (µS/cm) | Hardness (mg CaCO3/L) | TDS (mg/L) | Clorides (mg Cl-/L) | Fats & Oils (mg/L) | TPH (µg/L) |
|---|---|---|---|---|---|---|
| EPA NRWQC (water + organism consumption) | – | – | 250 | | – | – |
| EPA NRWQC (aquatic life chronic exposure) | – | – | | 230 | – | – |
| WHO drinking water | – | – | | – | – | – |
| EPA secondary drinking water | – | – | 500 | 250 | – | – |

## METALS (ALL MG/L)

| # | Location | Hg | Ag | Al | As | B | Ba | Be | Bi | Ca | Cd | Co | Cr | Cu | Fe | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4313 | Quebrada Jose Olaya, 100m upstream from confluence with Corrientes | <LD (0.001) | <LD (0.001) | 0.07 | <LD (0.005) | <LD (0.1) | 0.026 | <LD (0.0003) | <LD (0.005) | 10.8 | <LD (0.001) | <LD (0.001) | <LD (0.001) | <LD (0.003) | 0.7 | |
| 4325 | Rio Corrientes, 3km upstream from Jose Olaya | <LD (0.001) | 0.001 | 0.74 | <LD (0.005) | <LD (0.1) | 0.035 | <LD (0.0003) | <LD (0.005) | 2.1 | <LD (0.001) | 0.001 | 0.002 | 0.003 | 1.9 | |
| 4326 | Rio Corrientes, 100m below Quebrada Jose Olaya | <LD (0.001) | <LD (0.001) | 0.67 | <LD (0.005) | <LD (0.1) | 0.193 | <LD (0.0003) | <LD (0.005) | 28 | <LD (0.001) | 0.001 | 0.002 | 0.003 | 2.2 | |
| 4327 | Quebrada Toeyacu (near Teniente Lopez), 30m before confluence with Corrientes | <LD (0.001) | <LD (0.001) | 0.13 | <LD (0.005) | <LD (0.1) | 0.029 | <LD (0.0003) | <LD (0.005) | 6.7 | <LD (0.001) | <LD (0.001) | <LD (0.001) | <LD (0.003) | 0.9 | |
| 4328 | Rio Macusari, at Puente Macusari (upstream of Nuevo Jerusalen) | <LD (0.001) | <LD (0.001) | 0.45 | <LD (0.005) | <LD (0.1) | 0.035 | <LD (0.0003) | <LD (0.005) | 2.5 | <LD (0.001) | <LD (0.001) | <LD (0.001) | <LD (0.003) | 1.2 | |
| 4329 | Quebrada Huayuri, 100m below discharge from Huayuri Battery | <LD (0.001) | <LD (0.001) | 0.39 | <LD (0.005) | 0.1 | 0.418 | <LD (0.0003) | <LD (0.005) | 63.7 | 0.001 | <LD (0.001) | <LD (0.001) | <LD (0.003) | 1.9 | |
| 4330 | Quebrada Huayuri, 100m above discharge from Huayuri Battery | <LD (0.001) | <LD (0.001) | 0.42 | <LD (0.005) | <LD (0.1) | 0.026 | <LD (0.0003) | <LD (0.005) | 1.3 | 0.002 | <LD (0.001) | <LD (0.001) | 0.004 | 1.5 | |
| 4331 | Quebrada Pucacuro, 100m below discharge from Dorissa Battery | <LD (0.001) | <LD (0.001) | <LD (0.01) | <LD (0.005) | 0.9 | 1.957 | <LD (0.0003) | <LD (0.005) | >70 | <LD (0.001) | <LD (0.001) | <LD (0.001) | <LD (0.003) | 2.6 | |
| 4332 | Quebrada Pucacuro, 100m above discharge from Dorissa Battery | <LD (0.001) | <LD (0.001) | 4.73 | <LD (0.005) | <LD (0.1) | 0.079 | <LD (0.0003) | <LD (0.005) | 8.2 | 0.005 | <LD (0.001) | <LD (0.001) | 0.003 | 7.8 | |
| 4333 | Quebrada Pucacungayacu, 100m below discharge from Jibarito Battery | <LD (0.001) | <LD (0.001) | <LD (0.01) | <LD (0.005) | 1 | 1.691 | <LD (0.0003) | <LD (0.005) | >70 | <LD (0.001) | <LD (0.001) | <LD (0.001) | <LD (0.003) | 1.4 | |
| 4334 | Quebrada Pucacungayacu, "altura captación de agua Jibarito" | <LD (0.001) | <LD (0.001) | 0.12 | <LD (0.005) | <LD (0.1) | 0.034 | <LD (0.0003) | <LD (0.005) | 3.3 | <LD (0.001) | <LD (0.001) | <LD (0.001) | <LD (0.003) | 1.4 | |
| 4342 | Huayuri Battery discharge | <LD (0.001) | <LD (0.001) | <LD (0.01) | <LD (0.005) | 13.8 | 18.052 | 0.001 | 0.021 | >70 | <LD (0.001) | 0.003 | <LD (0.001) | <LD (0.003) | 17.4 | |
| 4343 | Quebrada Huayuri residual waters | <LD (0.001) | <LD (0.001) | 15.21 | 0.021 | 3 | 4.117 | 0.003 | 0.008 | >70 | 0.005 | 0.396 | <LD (0.001) | 0.004 | 26.1 | |
| 4344 | Dorissa Battery discharge | <LD (0.001) | <LD (0.001) | <LD (0.01) | 0.009 | 17.6 | 17.832 | 0.001 | 0.026 | >70 | <LD (0.001) | 0.002 | <LD (0.001) | 0.004 | 21.7 | |
| 4345 | Jibarito Battery discharge | <LD (0.001) | <LD (0.001) | <LD (0.01) | 0.007 | 12.1 | 12.942 | 0.003 | 0.02 | >70 | <LD (0.001) | 0.001 | <LD (0.001) | 0.004 | 10.7 | |

| # | Location | K | Mg | Mn | Mo | Na | Ni | P | Pb | Sb | Sn | Sr | Ti | Tl | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4313 | Quebrada Jose Olaya, 100m upstream from confluence with Corrientes | 0.8 | 1.04 | 0.048 | <LD (0.005) | 2 | <LD (0.004) | <LD (0.1) | <LD (0.004) | <LD (0.005) | <LD (0.01) | 0.035 | <LD (0.003) | <LD (0.03) | <LD (0.002) | <LD (0.005) |
| 4325 | Rio Corrientes, 3km upstream from Jose Olaya | 0.5 | 0.76 | 0.71 | <LD (0.005) | 1.6 | <LD (0.004) | <LD (0.1) | <LD (0.004) | <LD (0.005) | <LD (0.01) | 0.03 | 0.013 | <LD (0.03) | 0.003 | 0.008 |
| 4326 | Rio Corrientes, 100m below Quebrada Jose Olaya | 1.7 | 2.51 | 0.133 | <LD (0.005) | >70 | <LD (0.004) | <LD (0.1) | <LD (0.004) | <LD (0.005) | <LD (0.01) | 1.356 | 0.016 | <LD (0.03) | 0.004 | 0.016 |
| 4327 | Quebrada Toeyacu (near Teniente Lopez), 30m before confluence with Corrientes | 0.6 | 0.74 | 0.044 | <LD (0.005) | 1.2 | <LD (0.004) | <LD (0.1) | <LD (0.004) | <LD (0.005) | <LD (0.01) | 0.032 | <LD (0.003) | <LD (0.03) | <LD (0.002) | 0.007 |
| 4328 | Rio Macusari, at Puente Macusari (upstream of Nuevo Jerusalen) | 0.7 | 0.87 | 0.048 | <LD (0.005) | 2.4 | <LD (0.004) | <LD (0.1) | <LD (0.004) | <LD (0.005) | <LD (0.01) | 0.051 | 0.004 | <LD (0.03) | <LD (0.002) | 0.006 |
| 4329 | Quebrada Huayuri, 100m below discharge from Huayuri Battery | 3.5 | 5.43 | 0.211 | <LD (0.005) | >70 | <LD (0.004) | <LD (0.1) | 0.004 | <LD (0.005) | <LD (0.01) | 3.19 | 0.004 | <LD (0.03) | 0.002 | 0.017 |
| 4330 | Quebrada Huayuri, 100m above discharge from Huayuri Battery | 0.6 | 0.48 | 0.066 | <LD (0.005) | 1.6 | <LD (0.004) | <LD (0.1) | 0.005 | <LD (0.005) | <LD (0.01) | 0.02 | 0.009 | <LD (0.03) | 0.002 | 0.022 |
| 4331 | Quebrada Pucacuro, 100m below discharge from Dorissa Battery | 18.8 | 44.59 | 1.137 | <LD (0.005) | >70 | <LD (0.004) | <LD (0.1) | 0.005 | <LD (0.005) | <LD (0.01) | >10 | <LD (0.003) | <LD (0.03) | <LD (0.002) | 0.052 |
| 4332 | Quebrada Pucacuro, 100m above discharge from Dorissa Battery | 0.8 | 0.94 | 0.079 | <LD (0.005) | 33.1 | <LD (0.004) | <LD (0.1) | 0.016 | <LD (0.005) | <LD (0.01) | 0.361 | 0.049 | <LD (0.03) | 0.017 | 0.034 |
| 4333 | Quebrada Pucacungayacu, 100m below discharge from Jibarito Battery | 12 | 29.22 | 0.798 | <LD (0.005) | >70 | <LD (0.004) | <LD (0.1) | <LD (0.004) | <LD (0.005) | <LD (0.01) | >10 | <LD (0.003) | <LD (0.03) | <LD (0.002) | <LD (0.005) |
| 4334 | Quebrada Pucacungayacu, "altura captación de agua Jibarito" | 0.8 | 0.96 | 0.059 | <LD (0.005) | 6 | <LD (0.004) | <LD (0.1) | <LD (0.004) | <LD (0.005) | <LD (0.01) | 0.066 | <LD (0.003) | <LD (0.03) | <LD (0.002) | 0.005 |
| 4342 | Huayuri Battery discharge | >70 | >70 | 9.383 | <LD (0.005) | >70 | <LD (0.004) | 0.1 | <LD (0.004) | <LD (0.005) | <LD (0.01) | >10 | <LD (0.003) | <LD (0.03) | <LD (0.002) | 0.536 |
| 4343 | Quebrada Huayuri residual waters | 64.6 | >70 | 20.859 | <LD (0.005) | >70 | 0.045 | <LD (0.1) | 0.019 | <LD (0.005) | <LD (0.01) | >10 | 0.05 | <LD (0.03) | <LD (0.002) | 0.294 |
| 4344 | Dorissa Battery discharge | >70 | >70 | 14.279 | <LD (0.005) | >70 | <LD (0.004) | 0.6 | <LD (0.004) | <LD (0.005) | <LD (0.01) | >10 | <LD (0.003) | <LD (0.03) | <LD (0.002) | 0.732 |
| 4345 | Jibarito Battery discharge | >70 | >70 | 6.667 | <LD (0.005) | >70 | <LD (0.004) | 0.1 | <LD (0.004) | <LD (0.005) | <LD (0.01) | >10 | <LD (0.003) | <LD (0.03) | <LD (0.002) | 0.015 |

## WATER QUALITY STANDARDS

| Source | Hg | Ag | Al | As | B | Ba | Be | Bi | Ca | Cd | Co | Cr | Cu | Fe | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EPA NRWQC (water + organism consumption) | – | – | – | 0.000 | – | 1 | – | – | – | – | – | – | – | 0.3 | |
| EPA NRWQC (aquatic life chronic exposure) | 0.77 | 0.003 | 0.087 | 0.15 | – | – | – | – | – | 0.25 | – | 0.074 | 9 | 1 | |
| WHO drinking water | 0.006 | – | – | 0.01 | 0.5 | 0.7 | | – | – | 0.003 | – | 0.05 | 2 | – | |
| EPA MCL | 0.002 | – | – | 0.01 | – | 2 | 0.004 | – | – | 0.005 | – | 0.1 | 1.3 | – | |
| EPA secondary drinking water | – | 0.1 | 0.05 | – | – | – | – | – | – | – | – | – | 1 | 0.3 | |

| Source | K | Mg | Mn | Mo | Na | Ni | P | Pb | Sb | Sn | Sr | Ti | Tl | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EPA NRWQC (water + organism consumption) | – | – | 0.05 | – | – | 0.61 | – | – | – | – | – | – | 0.000 | – | 7.4 |
| EPA NRWQC (aquatic life chronic exposure) | – | – | – | – | – | 0.052 | – | 0.003 | – | – | – | – | – | – | 0.12 |
| WHO drinking water | – | – | 0.4 | 0.07 | – | 0.07 | – | 0.01 | – | – | – | – | – | – | – |
| EPA MCL | – | – | – | – | – | – | – | 0.015 | – | – | – | – | 0.002 | – | – |
| EPA secondary drinking water | – | – | 0.05 | – | – | – | – | – | – | – | – | – | – | – | 5 |

## PERUVIAN GOVERNMENT SEDIMENT SAMPLING RESULTS (MG/KG)

| # | Location | TPH | Oil & Grease | Hg | Ag | Al | As | B | Ba | Be | Bi | Ca | Cd | Co | Cr | Cu | Fe | K | La |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4352 /S6 | Rio Corrientes, 3km upstream from Jose Olaya | <LD (5) | 70 | 0.08 | <LD (0.2) | 3.5 | <LD (3) | 4 | 55 | <LD (0.5) | <LD (5) | 1 | <LD (1) | 5 | 8 | 7.8 | 8.9 | 0.2 | 4.9 |
| 4353 / S7 | Quebrada Huayuri, 100m below discharge from Huayuri Battery | 28 | 480 | 0.01 | <LD (0.2) | 2.3 | <LD (3) | 5 | 20 | <LD (0.5) | <LD (5) | 0.4 | <LD (1) | 2 | 9 | 5.5 | 9.5 | <LD (0.1) | 3 |
| 4354 / S8 | Quebrada Pucacuro, 100m below discharge from Dorissa Battery | 304 | 4610 | 0.02 | <LD (0.2) | >5 | <LD (3) | 11 | 46 | <LD (0.5) | <LD (5) | 0.9 | <LD (1) | <LD (1) | 8 | 6.2 | >10 | 0.1 | 3 |
| 4355 / S9 | Quebrada Pucacuro, 100m above discharge from Dorissa Battery | 159 | 1040 | 0.02 | <LD (0.2) | 2.8 | <LD (3) | 5 | 40 | <LD (0.5) | <LD (5) | 0.5 | <LD (1) | <LD (1) | 7 | 4.3 | 9.2 | <LD (0.1) | 2.7 |
| 4356 / S10 | Quebrada Pucacungayacu, 100m below discharge from Jibarito Battery (right margin) | 309 | 4540 | 0.02 | <LD (0.2) | >5 | 4.7 | 19 | 52 | 0.5 | <LD (5) | 1.5 | <LD (1) | 4 | 10 | 11.7 | >10 | 0.2 | 8.8 |
| 4357 /S11 | Left margin of the earthen channel discharging from Jibarito Battery. | 570 | 13240 | <LD (0.01) | <LD (0.2) | >5 | 3.2 | 26 | 87 | 0.9 | <LD (5) | >10 | <LD (1) | 2 | 8 | 13.5 | >10 | 0.4 | 5.4 |

| # | Location | Mg | Mn | Mo | Na | Ni | P | Pb | Sb | Sc | Sn | Sr | Ti | Tl | V | W | Y | Zn | Zr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4352 /S6 | Rio Corrientes, 3km upstream from Jose Olaya | 0.6 | 195 | <LD (1) | <LD (0.1) | 4 | 0.1 | 5 | <LD (5) | 2 | <LD (10) | 15.4 | <LD (0.1) | <LD (2) | 16 | <LD (10) | 4 | 27.1 | 1.5 |
| 4353 / S7 | Quebrada Huayuri, 100m below discharge from Huayuri Battery | <LD (0.1) | 68 | <LD (1) | 0.2 | 2 | <LD (0.1) | 5 | <LD (5) | 2 | <LD (10) | 17 | <LD (0.1) | <LD (2) | 21 | <LD (10) | 2.5 | 19.9 | 2 |
| 4354 / S8 | Quebrada Pucacuro, 100m below discharge from Dorissa Battery | 0.2 | 53 | <LD (1) | 0.9 | 2 | 0.2 | 28 | <LD (5) | 2.5 | <LD (10) | 45.9 | <LD (0.1) | <LD (2) | 29 | <LD (10) | 2.5 | 41.2 | 3 |
| 4355 / S9 | Quebrada Pucacuro, 100m above discharge from Dorissa Battery | 0.1 | 37 | <LD (1) | 0.1 | 1 | <LD (0.1) | 16 | <LD (5) | 2 | <LD (10) | 23.3 | <LD (0.1) | <LD (2) | 25 | <LD (10) | 2 | 23.9 | 2 |
| 4356 / S10 | Quebrada Pucacungayacu, 100m below discharge from Jibarito Battery (right margin) | 0.3 | 189 | <LD (1) | 1.5 | 4 | 0.2 | 9 | <LD (5) | 5 | <LD (10) | 77.5 | <LD (0.1) | <LD (2) | 44 | <LD (10) | 8.5 | 40.9 | 2.5 |
| 4357 /S11 | Left margin of the earthen channel discharging from Jibarito Battery. | 1.2 | 860 | <LD (1) | 9.7 | 4 | 0.2 | 11 | <LD (5) | 3.5 | <LD (10) | 298.4 | <LD (0.1) | <LD (2) | 34 | <LD (10) | 6.5 | 57.7 | 4 |

# APPENDIX C

## Maximum permissible limits for liquid effluents that are produced by activities related to the exploitation and commercialization of liquid hydrocarbons and their derivatives

(Resolution Number 030-96-EM/DGAA)

**Temperature:** The discharge of the effluent should not increase the temperature of the receiving body more than 37.4°F (3°C), considering this value at a radius of 1,640.42 ft (500 m) around the point of emission.

**Chloride:** The average annual concentration of chloride at the point of control of the receiving body should not be more than 250 mg/l.

### MAXIMUM PERMISSIBLE EMISSION LEVELS OF LIQUID EFFLUENTS FOR HYDROCARBON ACTIVITIES

| Parameter | Value in a given moment | Annual Average Value |
|---|---|---|
| pH | More than 5.5<br>Less than 9 | More than 5.5<br>Less than 9 |
| Oil and grease (mg/l) dumped in the ocean | 50 | 30 |
| Oils and grease (mg/l) dumped in continental bodies of water | 30 | 20 |
| Barium (mg/l) | 5.0 | 3.0 |
| Lead (mg/l) | 0.4 | 0.2 |

# ENDNOTES

1 Occidental Petroleum Corporation [Oxy], *Oil and Gas Segment: Peru, available at* http://www.Oxy.com/OIL_GAS/world_ops/latin_america/peru.htm (last visited April 20, 2007).

2 Descola, P., LA SELVA CULTA: SIMBOLISMO Y PRAXIS EN LA ECOLOGÍA DE LOS ACHUAR (Abya Yala, Colección Pueblos del Ecuador 3, Tercera Edición, Ecuador, 1996).

3 Los Achuar de la Amazonía Peruana, *available at* http://www.achuarperu.org/en/index.htm (last visited April 20, 2007).

4 Los Achuar de la Amazonía Peruana, *The House and Agriculture, available at* http://www.achuarperu.org/en/40culture_and_customs/_house_agriculture.htm?PHPSESS*Id*=7c8f3ad4d896960acee69d991ae36121 (last visited April 20, 2007).

5 Descola, *supra* note 2 at 468.

6 Los Achuar de la Amazonía Peruana, *Food and House, available at:* http://www.achuarperu.org/en/40culture_and_customs/food_house.htm?PHPSESS*Id*=7c8f3ad4d896960acee69d991ae36121 (last visited April 20, 2007).

7 La Torre López, Lily, ALL WE WANT IS TO LIVE IN PEACE: LESSONS LEARNED FROM OIL OPERATIONS IN INDIGENOUS TERRITORIES OF THE PERUVIAN AMAZON (IUCN and Racimos de Ungurahui Working Group 1999).

8 ERI interview # 44 (on file with authors).

9 La Torre López, *supra* note 7.

10 Instituto Nacional de Estadística e Informática, *Información socio-demográfica, available at* http://www.inei.gob.pe (last visited April 20, 2007).

11 Populations: approximately 750 people in Pampa Hermosa; 320 in Nueva Jerusalén; 180 each in Saukí and José Olaya; and about 100 people in Antioquía/Jíbaro. In late 2005, the community of Antioquía, generally known as Jíbaro, largely relocated to an area farther up the Corrientes River.

12 ERI interview # 37 (on file with authors).

13 La Torre López, *supra* note 7 at 34-6 (FECONACO receives support from and is represented nationally by the Inter-Ethnic Association for the Development of the Peruvian Jungle – *Asociación Inter-étnica de Desarrollo de la Selva Peruana* or AIDESEP – the national representative body of indigenous federations of the Peruvian Amazon).

14 WWF-Peru. RAMSAR WETLANDS INFORMATIONAL DOSSIER, *Abanico del Pastaza Wetlands Complex*, at 2, 4 (July 2001).

15 As a member of the Ramsar Convention, Peru has an obligation to ensure the maintenance of the ecological characteristics of each of its Ramsar sites, promote the rational use of wetlands, conduct environmental impact assessments before performing changes in wetlands, and promote capacity-building for research, management, and rational use of wetlands. *Informe: El petróleo en el nororiente peruano: Lotes 8, 1AB y perspectivas*, p. 19.

16 WWF-Peru, *supra* note 14 at 2, 3, 13 (Examples of species found there include: 292 fish species, 66 mammal species, 261 bird species, 57 amphibian species, 38 reptile species, 17 endangered species, and a large number of threatened species such as the spider monkey, black caiman, charapa turtle, and giant river otter. The region also harbors diverse aquatic environments, including seven of the 20 types of classified continental wetlands and eight of the nine Amazon wetland types, as well as an abundance of mixed palm forest and rare timber species).

17 WWF-Peru, *id* at 5.

18 United Nations Environment Programme, *World Conservation Monitoring Centre, available at* http://www.unep-wcmc.org/ (last visited April 20, 2007).

19 ERI interview 39 (on file with authors).

20 *Mauritia flexuosa* and *Euterpe sp.*

21 Descola, *supra* note 2.

22 ERI interview # 44 (on file with authors).

23 La Torre López, *supra* note 7 at 16-42.

24 Powers, Bill, OCCIDENTAL'S POLLUTION PREVENTION PRACTICES IN BLOCK 1AB VIOLATED INDUSTRY STANDARDS FROM INCEPTION OF OPERATIONS IN 1975 (E-Tech International 2006) at 2.

25 Peruvian Ministry of Energy and Mines, *1999 annual report, chapter 6, available at* http://www.minem.gob.pe/archivos/dgh/publicaciones/anuario1999/capitulo6.pdf#search=%2Occidental%20lote %201AB%22 (last visited April 20, 2007).

26 The nine production camps are in: North Capahuari, South Capahuari, Huayuri, Dorissa, Jibarito, Shiviyacu, Forestal, San Jacinto, and Bartra.

27 Oxy, *supra* note 1.

28 ERI interview # 39 (on file with authors).

29 La Torre López, *supra* note 7.

30 Yánez, Ivonne (ed.), LA MANERA OCCIDENTAL DE EXTRAER PETRÓLEO at 15-19, 46-83 (Oilwatch, June 2001).

31 Leal, Colonel Javier Fernandez, *Costs of War in Colombia: A Strategic Vision of the End of the Conflict*, 18 March 2005, U.S. Army War College, Carlisle Barracks, PA.

32 Mujica v. Occidental Petroleum Corp., 381 F.Supp.2d 1164 (C.D.Cal.,2005) (Complaint filed April 24, 2003 for damages, injuctive and declaratory relief filed by International Labor Rights Fund et. al before the U.S. District Court for the Central District of California).

33 Yánez, Ivonne (ed.), *supra* 30 at 84-104.

34 Ibid at 94-104.

35 Comando Conjunto de las Fuerzas Armadas (Joint Armed Forces Command), *Convenio de cooperación de seguridad militar entre el Ministerio de Defensa Nacional y la compañía 'Occidental Exploration and Production Company' en la Amazonía ecuatoriana* (Military Security Cooperation Compact between the Ministry of National Defense and the Occidental Exploration and Production Company in the Ecuadorian Amazon). Quito, Ecuador (April 1, 2000); Ministerio de Defensa Nacional (Ministry of National Defense), *Convenio de cooperación de seguridad militar entre el Ministerio de Defensa Nacional y las empresas petroleras que operan en el Ecuador* (Military Security Cooperation Compact between the Ministry of National Defense and the Petroleum Companies Operating in Ecuador). Quito, Ecuador (July 30, 2001).

36 Comuna Kichwa El Eden, *Letter to Ecuador's Director of Environmental Protection Denouncing Occidental for Contaminating El Eden's Territories*, September 17, 2004.

37 Press conference, Peruvian Congress, Lima, Peru, 16 February, 2004. *"Ayuda memoria de la situación petrolera en el Lote Petrolero 64 a cargo de la empresa Oxi en tierras de las comunidades Achuar de la Cuenca de Pastaza."* AIDESEP press release, February 12, 2004, Lima, Peru.

38 Oxy, *Human Rights Policy* (December 7, 2004) *available at* http://www.oxy.com/Social%20Responsibility/rights/human_rights_policy.htm (last visited April 23, 2007).

39 Perúpetro, *Benefits, available at* http://mirror.perupetro.com.pe/beneficios-e.asp (last visited April 20, 2007).

40 Perúpetro, *Statistics, avaialble at* http://mirror.perupetro.com.pe/estadisticas01-e.asp#link7 (last visited April 20, 2007).

41 As of April 2007, 39 concession contracts had been signed totaling 30 million hectares; 11 blocks were up for bidding totaling 9 million hectares; and 11 contracts are currently in negotiation totaling 7 million hectares, totaling 48.5 million hectares.

42 Perúpetro, *supra* note 40.

43 Food and Agriculture Organization of the United Nations, *available at* http://www.fao.org (last visited April 23, 2007).

44 Argonne National Laboratory, *A White Paper Describing Produced Water from Production of Crude Oil, Natural Gas, and Coal Bed Methane* (Jan. 2004) (Prepared for the U.S. Department of Energy) *available at* http://www.netl.doe.gov/technologies/oil-gas/Petroleum/projects/Environmental/Produced_Water/49124.htm (last visited April 23. 2007).

45 Oficina Nacional de Evaluación de Recursos Naturales' [ONERN] current-day replacement agency is the National Institute of Natural Resources (INRENA, *Instituto Nacional de Recursos Naturales*).

46 ONERN: *Inventario y evaluación de recursos naturales de la microregión Pastaza-Tigre (departamento de Loreto)*. Lima: Oficina Nacional de Evaluación de Recursos Naturales (1984).

47 Talismán (Peru) Ltd., *Estudio de impacto ambiental y social de la prospección sísmica 3D y de la perforación exploratoria del Lote 101*, (Nov. 2006), *available at* www.minem.gob.pe/archivos/dgaae/publicaciones/resumen/talisman/volumenIII.pdf (last visited April 20, 2007).

48 La Torre López, *supra* note 7 at 51.

49 La Torre López, *id* at 51.

50 1996 Racimos interview # 1 (on file with authors).

51 1996 Racimos interview #2 (on file with authors).

52 La Torre López, *supra* note 7 at 50.

53 La Torre López, *id.*

54 La Torre López, *id* at 52.

55 The E&P Forum, *Oil Industry Operating Guidelines for Tropical Rainforests*, Report No. 2.49/170 (April 1991) at 14, *available at* http://www.ogp.org.uk/pubs/170.pdf (last visited April 23, 2007) [E&P Forum I]; The E&P Forum, *Exploration and Production (E&P) Waste Management Guidelines*, Report No. 2.58/196 (Sept. 1993) at 14-15, *available at* http://www.ogp.org.uk/pubs/196.pdf (last visited April 23, 2007).

56 The E&P Forum I, *id* at 54-55.

57 T.H.E. Laboratories, Inc., *Estudio de impacto ambiental: Proyecto de perforación en el Lote 1AB* (Environmental Impact Asessment: Drilling Project for Lot 1AB). Prepared for Occidental Peruana, Inc. Sucursal del Perú: Broomfield, CO. (21 August 1995) (on file with authors).

58 La Torre López, *supra* note 7 at 54.

59 ERI interview # 17 (on file with authors).

60 Powers, *supra* note 24 at 2.

61 ERI interview # 20 (on file with authors).

62 ERI interview # 31 (on file with authors).

63 La Torre López *supra* note 7 at 76.

64 ERI interview # 30 (on file with authors).

65 ERI interview # 29 (on file with authors).

66 ERI interview # 44 (on file with authors).

67 ERI interview # 44 (on file with authors).

68 ERI interview # 22 (on file with authors).

69 "*Acta que completa y precisa los acuerdos suscritos entre las comunidades indígenas del Río Corrientes – FECONACO, el Ministerio de Energía y Minas, el Ministerio de Salud, el Gobierno Regional de Loreto, la Empresa Pluspetrol Norte S.A. y la Defensoría del Pueblo* (Act Completing and Detailing the Accords Signed by the Indigenous Communities of the Corrientes River – FECONACO, the Ministry of Energy and Mines, the Ministry of Health, the Regional Government of Loreto, Pluspetrol Norte S.A., and the Human Rights Ombudsman of Peru) (22 October 2006) (on file with authors).

70 DIGESA, *Visita de reconocimiento para la evaluación de la calidad sanitaria de los recursos hídricos y muestreo biológico en las comunidades de la cuenca del Río Corrientes*, Informe N° 995-2006/DEPA-APRHI/DIGESA (May 2006) (See Appendix B for more complete results of the DIGESA study).

71 Also known as Quebrada Pucacungayacu.

72 The discharge points sampled: the discharge of the Dorissa Battery on the Quebrada Pucacuro, which feeds into the Macusari River between Nueva Jerusalén and Saukí, and samples 100m above and below the discharge point; the discharge of the Huayuri Battery on the Quebrada Huayuri, which feeds into the Corrientes above José Olaya, and samples 100m above and below the discharge point; and the discharge of the Jibarito Battery on the Quebrada Pucacungayacu (also known as Jibarito), which feeds into the Corrientes around the community of Jíbaro; and samples somewhere above and 100m below the discharge point. One additional sample was taken of the "residual waters" at the Quebrada Huayuri. See Appendix B.

73 United States Environmental Protection Agency (EPA) Office of Water and Office of Science and Technology, *National Recommended Water Quality Criteria* (2006), *available at* http://www.epa.gov/waterscience/criteria/nrwqc-2006.pdf (last visited April 20, 2007).

74 DIGESA, *supra* note 70.

75 DIGESA, *id.*

76 United States Department for Health and Human Services Agency for Toxic Substances and Disease Registry, *Barium* (Sept. 2005), *available at* http://www.atsdr.cdc.gov/tfacts24.pdf (last visited April 2007) [HHS].

77 F.M. Chaudhry, A. Wallace, and R.T. Mueller, *Barium Toxicity in Plants*, 8 COMMUN. SOIL SCI. PLANT ANAL. 795 (1997).

78 World Health Organization, *Guidelines for Drinking Water Quality, Annex 4: Chemical Summary Tables* (2006), *available at* http://www.who.int/entity/water_sanitation_health/dwq/gdwq0506_ann4.pdf.

79 DIGESA, *supra* note 70.

80 DIGESA, *id.*

81 United States Department for Health and Human Services Agency for Toxic Substances and Disease Registry, *ToxFAQs for Boron and Compounds* (Sept. 1995), *available at* http://www.atsdr.cdc.gov/tfacts26.html (last visited April 2007).

82 World Health Organization, *supra* note 78.

83 DIGESA, *supra* note 70.

84 HHS, *supra* note 76.

85 EPA, Ground Water and Drinking Water, *Technical Factsheet on Polycyclic Aromatic Hydrocarbons (PAHs)* (Nov. 2006), *available at* http://www.epa.gov/OGWDW/dwh/t-soc/pahs.html (last visited April 20, 2007).

86 DIGESA, *supra* note 70.

87 EPA, *supra* note 85.

88 EPA, *id.*

89 Tests taken as follows: one on the Corrientes 3 km above José Olaya; three on the Huayuri, Pucacuro, and Jibarito Quebradas, 328.01 ft (100 m) below the discharge from the batteries; one on the Quebrada Pucacuro, 328.01 ft (100 m) above the discharge from Dorissa Battery; and one on the earthen channel into which the Jibarito Battery discharges.

90 Quebrada Jibarito was most extensively investigated by the team. Sediment samples collected from two locations on the banks of this stream and from an adjoining pool contained between 650 and 750 mg/kg (dry weight) TPH. Samples from the other two streams investigated, Quebrada Huayuri and Quebrada Pucacuro, were collected close to their confluence with receiving rivers. Though lower TPH levels were found in both as compared to the Quebrada Jibarito, it is important to note that this does not indicate that the streams are necessarily less contaminated. Assessment of the extent of oil contamination and its impact in these locations would require further, and more extensive, investigation.

91 ERI interview # 20 (on file with authors).

92 ERI interview # 25 (on file with authors).

93 ERI interview # 22 (on file with authors).

94 ERI interview # 1 (on file with authors).

95 ERI interview # 29 (on file with authors).

96 ERI interview # 30 (on file with authors).

97 T.H.E. Laboratories, Inc., *supra* note 57.

98 ERI interview # 2 (on file with authors).

99 ERI interview # 3 (on file with authors).

100 ERI interview # 35 (on file with authors).

101 Racimos interview # 10 (on file with authors).

102 ERI interview # 20 (on file with authors).

103 T.H.E. Laboratories, Inc., *supra* note 97.

104 In the case of Nueva Jerusalén, the high location of the community preserves people's home gardens from contamination. For this reason, production in this community seems to be higher.

105 ERI interview # 25 (on file with authors).

106 Mentioned specifically by interviewees: (a) *manioc* – tubers are hard/dry, small, or rotten; leaves turn yellow and fall off; plants are stunted; production cycle takes longer; in some cases, entire plant dies; (b) *plantain*: smaller fruits; yellow, dry leaves; in some cases, whole plant dies; (c) *sweet potato*: tubers are hard (dry); production cycle takes longer; (d) *corn*: dry; (e) *taro and yams*: sometimes get hard; sometimes rot; (f) *rice*: does not produce or else dies; (g) *sugarcane*: dry; (h) *pineapple*: does not produce anymore, or only once (in the past, produced "all the time"); (i) *papaya*: gets so dry it is rarely cultivated anymore; and (j) *lemon tree*: dry.

107 ERI interview # 17 (on file with authors).

108 The unusually dry weather during the mission cannot account for the downstream desiccation since the upstream vegetation should also have been affected if dry weather were the cause. Moreover, the lack of healthy vegetation along the Macusari River, and particularly below the mouth of the Quebrada Pucacuro, follows a similar pattern to that found on the Corrientes (although with a lesser degree of desiccation), even after a day of strong rainfall.

109 ERI interview # 3 (on file with authors).

110 ERI interview # 20 (on file with authors).

111 ERI interview # 24 (on file with authors).

112 A 1984 ONERN evaluation described the rainforest in Block 1AB at the time as "a dense mass of forest vegetation with good vertical development formed by closely-spaced trees with broad, leafy crowns, as well as large extensions of wetlands." La Torre López, *supra* note 7 at 239.

113 DOMUS Consultoría Ambiental SAC, *Efectos ambientales de la actividad petrolera en las áreas de influencia de los Lotes 8/8x y 1AB, Loreto* (2003) (Consultancy done for WWF).

114 Pluspetrol Norte S.A., *Plan ambiental complementario Lote* 1AB (2004) at 115.

115 Pluspetrol Norte S.A, *id*.

116 ERI interview # 17 (on file with authors).

117 ERI interview # 25 (on file with authors).

118 ERI interview # 44 (on file with authors).

119 ERI interview # 29 (on file with authors).

120 ERI interview # 1 (on file with authors).

121 Descola, *supra* note 2 at 468.

122 Descola, *id*.

123 T.H.E. Laboratories Inc., *supra* note 97.

124 ERI interview # 25 (on file with authors).

125 ERI interview # 40 (on file with authors).

126 Kimerling, J., *Amazon Crude* (Natural Resources Defense Council 1991).

127 La Torre López, *supra* note 7 at 239.

128 For example, the Pucacuro, Jibarito, and Huayuri streams.

129 Interviewees described current state of particular fish species on which their subsistence has traditionally depended: (1) *Sábalo* (*Brycon sp.*): no longer any big ones found in Pampa Hermosa; are now very small with tough flesh; two generations ago, these fish were soft. (2) *Carachama (fam. Loricariidae)*: armored catfish that live on the bottoms of rivers and are thus particularly exposed to contamination. In Pampa Hermosa, residents sometimes throw the fish away because the meat smells of oil. (3) *Zúngaro (Zungaro zungaro)*: In Nueva Jerusalén, the bodies of these large catfish are often stained, reek of petroleum, and are rotting at the gills. (4) *Boquichico (Prochilodus sp.)*: In Jíbaro, some of these fish are very tough and skinny, and petroleum can be seen in their guts.

130 ERI interview # 25 (on file with authors).

131 ERI interview # 17 (on file with authors).

132 ERI interview # 19 (on file with authors).

133 ERI interview # 21 (on file with authors).

134 ERI interview # 11 (on file with authors).

135 ERI interview # 25 (on file with authors).

136 ERI interview # 3 (on file with authors).

137 ERI interview # 8 (on file with authors).

138 ERI interview # 12 (on file with authors).

139 ERI interview # 29 (on file with authors).

140 ERI interview # 19 (on file with authors).

141 Juan Antonio Cordoba and Miguel San Sebastian, *"Yana Curi" Report: The impact of oil development on the health of the people of the Ecuadorian Amazon* (1999), *available at* http://www.amazonwatch.org/amazon/EC/toxico/downloads/yanacuri_eng.pdf (last visited April 20, 2007).

142 ERI interview # 33 (on file with authors).

143 ERI interview # 25 (on file with authors).

144 Samples were taken according to standard blood-drawing protocols and tested on-site with a portable lead-testing machine for rapid *in vitro* lead-level evaluation.The analyzer used was *LeadCare, Blood Lead Testing System* by ESA, Inc., 22 Alpha Road, Chelmsford, MA, USA. Testing was done following strict protocol regarding blood sample preparation, user technique, ambient testing conditions, equipment, configuration, calibration, and testing materials, and additional blood samples were analyzed in U.S. laboratories after the completion of the mission. Prior to taking each blood sample, the medical team informed the communities and each patient about the test. Both community and individual informed consent were obtained prior to the examination and testing. Patients acknowledged their consent by signing or making their mark on the forms and guardians expressed their consent on behalf of minors.

145 Centers for Disease Control and Prevention (CDC), *Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials* (1997), *available at* http://www.cdc.gov/nceh/lead/guide/guide97.htm (last visited April 20, 2007); CDC, *Managing Elevated Blood Lead Levels Among Young Children: Recommendations from the Advisory Committee on Childhood Lead Poisoning Prevention* (2002), *available at* http://www.cdc.gov/nceh/lead/CaseManagement/caseManage_main.htm (last visited April 20, 2007).

146 EPA, *Integrated Risk Information System (IRIS) Risk Information for Lead and Compounds (Inorganic)* (Jan. 2007), *available at* http://www.epa.gov/iris/subst/0277.htm#reforal (last visited April 20, 2007).

147 P. A. Baghurst, A. J. McMichael, G. V. Vimpani, N. R. Wigg, R. J. Roberts, and E. F. Robertson, *Port Pirie Cohort Study: Environmental exposure to lead and children's abilities at the age of four years*, New England Journal of Medicine 319(8), 468-75 (1988); P. Auinger, C. Cox, K. Dietrich, and B. P. Lanphear, *Cognitive deficits associated with blood lead concentrations <10 microg/dL in U.S. children and adolescents*, PUBLIC HEALTH REPORTS 115(6), 521-29 (2000); E. K. Silbergeld, *Preventing lead poisoning in children*, ANNUAL REVIEW OF PUBLIC HEALTH 18, 187-210 (1997).

148 Ministerio de Salud, *Comisión intrasectoral para la prevencíon y mitigacíon de la contaminación por plomo y otros metales pesados, (2006), available at* http://www.minsa.gob.pe/portalMinsa/destacados/archivos/242/RIO%20CORRIENTES.pdf (last visited April 20, 2007).

149 J. Blanco, V.H. Borja-Aburto, P. Farias, I. Hertz-Picciotto, C. Rios, and M. Rojas López, *Blood-Lead Levels Measured Prospectively and Risk of Spontaneous Abortion*, AMERICAN JOURNAL OF EPIDEMIOLOGY 150:590-597 (1999); O.G. Berger, R.L. Bornschein, K.N. Dietrich, M.D. Ris, and P.A. Succop, *Early Exposure to Lead and Juvenile Delinquency*, NEUROBEHAVIORAL TOXICOLOGY AND TERATOLOGY 23:511-518 (2001); P. Factor-Litvak, J. Graziano, J.K. Kline, and G. Wasserman, *The Yugoslavia Prospective Study of Environmental Lead Exposure*, ENVIRONMENTAL HEALTH PERSPECTIVES 107:9-15 (1999); K.H. Hsu, J.L. Lin, D.T. Lin-Tan, and C.C. Yu, *Environmental Lead Exposure and Progression of Chronic Renal Diseases in Patients Without Diabetes*, NEW ENGLAND JOURNAL OF MEDICINE 348:277-286 (2003); P. Auinger, B.P. Lanphear, and M.E. Moss, *Association of Dental Caries and Blood-Lead Levels*, JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION 281:2294-2298 (1999); R.B. Kaufmann, M. Lustberg, L. Magder, D. Nash, R.J. Rubin, R.W. Sherwin, and E.K. Silbergeld, *Blood Lead, Blood Pressure, and Hypertension in Perimenopausal and Postmenopausal Women*, JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION 289:1523-1532 (2003); S.E. Fienberg, C. McFarland, H.L. Needleman, R.B. Ness, and M.J. Tobin, *Bone lead levels in adjudicated delinquents. A case control study*, NEUROBEHAVIORAL TOXICOLOGY AND TERATOLOGY 24:711-717 (2002); D. Otto and J. Schwartz, *Lead and Minor Hearing Impairment*, ARCHIVES OF ENVIRONMENTAL HEALTH 46:300-305 (1991)

150 J. Blanco, V.H. Borja-Aburto, P. Farias, I. Hertz-Picciotto, C. Rios, and M. Rojas López, *Blood-Lead Levels Measured Prospectively and Risk of Spontaneous Abortion*, AMERICAN JOURNAL OF EPIDEMIOLOGY 150:590-597 (1999); P. Auinger, C. Cox, K. Dietrich, and B.P. Lanphear, *Cognitive Deficits Associated with Blood-Lead Levels < 10 µg/dl in US Children and Adolescents*, PUBLIC HEALTH REPORTS 115:521–529 (2000); P. Auinger, B.P. Lanphear, and M.E. Moss, *Association of Dental Caries and Blood-Lead Levels*, JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION 281:2294-2298 (1999); D. Otto and J. Schwartz, *Lead and Minor Hearing Impairment*, ARCHIVES OF ENVIRONMENTAL HEALTH 46:300-305 (1991).

151 ERI interview # 5 (on file with authors).

152 ERI interview # 7 (on file with authors).

153 ERI interview # 9 (on file with authors).

154 ERI interview # 29 (on file with authors).

155 ERI interview # 2 (on file with authors).

156 ERI interview # 14 (on file with authors).

157 ERI interview # 16 (on file with authors).

158 ERI interview # 19 (on file with authors).

159 Ministerio de Salud, *supra* note 148.

160 EPA, *Consumer Factsheet on: CADMIUM*, (Nov. 2006), *available at* http://www.epa.gov/safewater/dwh/c-ioc/cadmium.html (last visited April 20, 2007).

161 ERI interview # 20 (on file with authors).

162 La Torre López, *supra* note 7 at 239.

163 ERI interview # 5 (on file with authors).

164 The Trompeteros Health Network provides the following infrastructure, listed in order of importance: (1) *Trompeteros Health Center*: provides medical, obstetrics, nursing, and five health technicians. The next closest healthcare service is P.S. I, Pampa Hermosa, approximately 10 hours away. The health center is equipped with transportation, which is available for use in emergencies. (2) *P.S. I, Pampa Hermosa*: equipped with two health technicians. Not equipped with its own transportation and the communities within its jurisdiction are anywhere from four to 18 hours distant by motorized canoe. (3) *P.S. I, Nueva Jerusalén*: equipped with one health technician. Not equipped with own transportation; is the most remote establishment in the entire network.

165 ERI interview # 14 (on file with authors).

166 ERI interview # 21 (on file with authors).

167 Both the Corrientes River basin and the southern portion of Louisiana have tropical or subtropical climates, marked by high temperatures, high humidity, and a season of heavy rainfall which causes flooding. In addition, geographically, both areas are flat lowlands in river basins: the Corrientes River basin in Peru and the Mississippi Delta in Louisiana. Southern Regional Climate Center, *Climate Synopsis for Louisiana* (2004), *available at* http://www.srcc.lsu.edu/southernClimate/atlas/ladescription (last visited April 20, 2007).

168 Louisiana Department of Conservation (Minerals Division), *Statewide Order Governing the Drilling for and Producing of Oil and Gas in the State of Louisiana*, Order Number 29-A, Section XV, (May 20, 1942).

169 Railroad Commission of Texas, *Texas Oil and Gas Statewide Rule Book* (effective July 1, 1964, amended July 1, 1967) *available at* http://www.rrc.state.tx.us/rules/rule.html (last visited April 23, 2007).

170 Railroad Commision of Texas, *supra* note 169 at Rule 8(c): Freshwater to be Protected, Exploratory Wells.

171 Railroad Commision of Texas, *id*.

172 For example, in the Round Mountain Oil Field in California, the groundwater was markedly deeper than the groundwater in Block 1AB, and there were still extensive prohibitions governing the discharge of produced waters in order to safeguard the environment and human health.

173 Seacrest Group, *Plan ambiental complementario – Lote 1AB*, (Dec. 2004) at 12 (prepared for Pluspetrol Norte) *available at* http://www.seacrestgroup.com (last visited April 23, 2007).

174 American Petroleum Institute Committee on Vocational Training & Executive Committee on Training & Development, VOCATIONAL TRAINING SERIES, BOOK 1: PRIMER OF OIL AND GAS PRODUCTION (1978) at 46-48 [API].

175 API, *id* at Rule 9 ("Salt water or other water containing minerals . . . may be disposed of . . . by injection into the following formations.").

176 Louisiana Department of Conservation, *supra* note 168.

177 Railroad Commission of Texas, *Open Pit Storage Prohibited*, Texas Statewide Order No. 20-804 (July 31, 1939).

178 Railroad Commission of Texas, *id*.

179 ERI interview # 30 (on file with authors).

180 *Case Concerning the Gabcikovo-Nagyamaros Project* (*Hungary v. Slovakia*), 1997 I.C.J. Rep. 7 (Sep. 25, 1997) (sep. op. of Weeramantry, J.).

181 Inter-American Commission on Human Rights, *Report on the Situation of Human Rights in Ecuador*, OEA/Ser.L/V/II.96, Doc. 10 rev. 1 (1997) [IACHR].

182 Committee on ESCR, *General Comment No. 14: The Right to the Highest Attainable Standard of Health*, ¶ 4, U.N. Doc. E/C.12/2000/4 (2000).

183 United Nations Conference on Environment and Development, *Rio Declaration on Environment and Development*, 31 I.L.M. 874 (1992).

184 United Nations Conference on Human Environment, *Declaration of the United Nations Conference on Human Environment ("Stockholm Declaration")*, U.N. Doc. A/CONF.48/14, 11 I.L.M. 1416 (1972).

185 *Sarei v. Rio Tinto PLC*, 221 F. Supp. 2d 1116, 1151-53 (C.D. Cal. 2002), *affirmed in part as to this holding by Sarei v. Rio Tinto, PLC,* 456 F.3d 1069, 1078 (9th Cir. 2006).

186 IACHR, *supra* note 181.

187 *The Social and Economic Rights Action Center v. Nigeria*, African Commission on Human and Peoples' Rights, Comm. No. 155/96, ¶¶ 44, 46 (2001).

188 *Id*. ¶ 58.

189 Stockholm Declaration, *supra* note 184 at pmbl. para. 7.

190 Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights ¶ 1, U.N. Sub-Commission on the Promotion and Protection of Hum. Rts., 55th Sess., U.N. Doc. E/CN.4/Sub.2/2003/12/Rev.2 (2003).

191 *Id*. ¶ 14.

192 General Health Law 26842, Article 17 *available at* http://www.congreso.gob.pe/ntley/Imagenes/Leyes/26842.pdf (last visited April 23, 2007).

193 General Health Law, *id* at Article 18.

194 General Health Law, *id* at Article 104.

195 Oxy also violated Article 57 of the Regulation of the General Water Law (DS 261-69-AP) which prohibits dumping without prior authorization from the Sanitary Authority. With the passing of this regulation for the oil sector, the company was obligated to implement corrective measures for its activities that had produced negative impacts; however, Oxy did not put these measures in place.

196 Supreme Decree 261-69-AP, Article 57 *available at* http://www.digesa.sld.pe/normas_agua.asp (last visited April 23, 2007).

197 Supreme Decree 261-69-AP, *id* at Article 61.

198 Supreme Decree 046-1993-EM *available at* www.minem.gob.pe/archivos (last visited April 23, 2007).

199 La Torre López, *supra* note 7 at 53-55.

200 Supreme Decree 046-1993-EM, *supra* note 198 at Articles 27-44.

201 1996 Racimos interview #3 (on file with authors).

202 1996 Racimos interview #7 (on file with authors).

203 Article 304 reads as follows: "Environmental Contamination: Anyone who violates the environmental protection norms by contaminating the environment through dumping solid, liquid, gaseous, or any other kind of wastes above the established limits, that harm or might harm or produce changes in the flora, fauna, and hydrologic resources, will be punished through deprivation of liberty no less than one nor greater than three years or with 180 to 365 days – fine." The fine requires the person to pay the total of their wages earned for the specified number of days.

204 As per hydrocarbon activities, the only variance in limits is in the distinction between sea water and continental bodies of water, in terms of hydrocarbon activities.

205 Occidental Peruana, Inc., *Water Quality Monitoring Program for Block 1AB in Compliance with RD 030-96-EM/DGAA* (July, Aug., and Sept. 1998, Jan., Feb., and March 1999, and April, May, and June 1999).

206 For example, Dow Chemical and several other chemical companies – including Oxy – have been sued over the chemical DBCP, a pesticide used in banana plantations in Latin America that causes sterility among those workers exposed to it. In 1997, Dow and Oxy, along with a number of other companies, settled a lawsuit in the U.S. for over US$40 million; other lawsuits are still pending. Environmental contamination from a Peruvian mine has also led to a lawsuit in the U.S. Newmont Mining Corporation, a U.S. corporation that runs the Yanacocha mine in northern Peru, has been sued in U.S. court for an incident in which it released toxic mercury into a nearby village. Newmont has tried to have the suit dismissed since it was filed in 2002, but so far has not succeeded in its efforts.

207 ERI interview # 45 (on file with authors).

208 Oxy's 2004 human rights policy states that Oxy "is committed to consulting with, and seeking the pre-approval of, any legitimate local communities affected by its business operations in order to minimize potential negative impacts on such communities as well as its operations."

209 FPIC has been defined by the ILO as the right of communities "to exercise control, to the extent possible, over their own economic, social, and cultural development." FPIC has been recognized by the World Bank, United Nations Environment Programme, the United Nations Development Programme, and the IACHR of the Organization of American States, among others.

210 ERI interview # 25 (on file with authors).

"[Oxy] said there wasn't anything wrong, that the river and the animals and fish were fine. . . . Oxy . . . didn't warn us about anything, and this was when Oxy was contaminating our area. . . . Oxy said, 'we're just extracting petroleum, we're not contaminating.' And so we got no support from Oxy . . . How am I going to survive? Where am I going to hunt? I want help. How am I going to raise my children?"

– Man from Antioquía, May 2006


EARTHRIGHTS INTERNATIONAL

1612 K Street, NW, Suite 401
Washington, DC 20006
Tel: 202.466.5188
Fax: 202.466.5189
www.EarthRights.org

GRUPO DE TRABAJO Racimos de Ungurahui

Calle Islas Canarias Manzana J-6, Lote 20
Urbanización Cedros de Villa – Chorrillos
Lima 9 – PERU
Tel: (+51) (1) 254.2490
ungurahui@ungurahui.com

AMAZON WATCH

One Hallidie Plaza, Suite 402
San Fransisco, California 94102
Tel: 415.487.9600
Fax: 415.487.9601
www.amazonwatch.org