

Data on Texpet's "Cleanup"

DATA ON TEXPET'S CLEANUP

Prepared August 22, 2008 by Stratus Consulting Inc.

Texaco's Phony "Cleanup"

- ▶ Texaco conducted a "cleanup" in the mid-1990s that addressed only a small fraction of the waste pits that they created and used.
 - During its years as sole operator of the Napo Concession (1964-1990), Texaco created and used 916 waste pits for the open disposal of crude oil, produced water, drilling muds, and other drilling chemicals.¹
 - Texaco's "cleanup" included only 16% of the 916 pits– they did nothing at the remaining 84% of the pits.¹
 - At the outset, Texaco excluded the vast majority of their waste pits (about 77%¹) from even being considered for cleanup based on Concession ownership percentages in 1992. In fact, the law holds that owners or operators are 100% responsible for cleanup of their operations, and thus Texaco is fully responsible for all of their pits.
 - Of the pits that Texaco did consider for cleanup, 16 waste pits were excluded from cleanup because the local communities were using them at the time as a source of water or for fish farming.² Texaco thus assumed that if a community were using a waste pit, the pit must be clean – despite the lack of comprehensive sampling data to confirm this astounding assumption. Samples collected from these pits during the trial showed that 60% of them contain more than 1,000 ppm total petroleum hydrocarbons (TPH) (the Ecuadorian standard), with concentrations up to 20,900 ppm TPH.¹
 - Other pits initially considered for cleanup were excluded because Texaco reported "no evidence of contamination" or because the pits were reported as having been previously "closed" by Texaco, despite a lack of sampling data to confirm that these pits were clean.² Data collected during the trial showed that these pits are highly contaminated: 100% exceed the 1,000-

¹ Cabrera Court Expert Report, Annex H.

² Woodward-Clyde International, 2000. "Remedial Action Project, Oriente Region Ecuador." Final Report. Prepared for Texaco Petroleum Company. May.

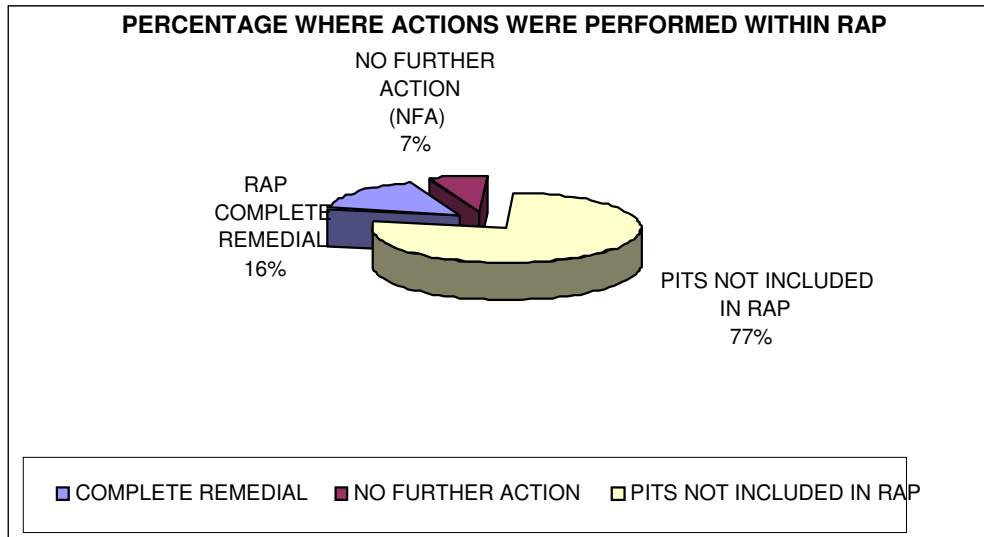
ppm TPH Ecuadorian standard. Chevron's own data show up to 175,000 ppm TPH in the "closed" pits and 63,000 ppm TPH in pits with "no detected impacts."¹

- ▶ For the small number of pits that Texaco did "clean," the clean up was ineffective.
 - The primary cleanup actions involved recovering floating crude oil for economic value, removing trash from the pits, and, at some pits, washing the surface soils or adding cement² (which the U.S. EPA has questioned as being ineffective in humid areas)¹. Nearly all of the contaminated soil was left in place, and there was no cleanup of the underlying contaminated groundwater.
 - The cleanup standard used by Texaco, 5,000 ppm TPH, is much higher than the Ecuadorian standard of 1,000 ppm. It is also much higher than TPH standards used by many U.S. states (many at or less than 100 ppm TPH).³
 - Many of the samples collected by Texaco's contractor immediately after the "cleanup" did not meet even the 5,000 ppm TPH standard.²
- ▶ Samples collected in the "cleaned" pits during the trial by Chevron, the plaintiffs, and the Court Expert showed that concentrations still exceed the 1,000 ppm Ecuadorian standard in 83% of the pits that Chevron claims were cleaned and that were sampled during the trial.¹ TPH concentrations were as high as 206,000 ppm in these pits.¹ The data clearly show that the pits that Texaco claims to have cleaned in fact are not clean.
- ▶ Samples collected by other parties also confirm that the Texaco "cleanup" was ineffective:
 - 40% of the samples collected by the Ecuadorian Ministry of Energy and Mines from 1995-2001 at sites in the Texaco cleanup scope exceeded 5,000 ppm TPH.¹
 - 73% of the samples from pits that Texaco declared "clean" that were collected in 2003 as part of an academic research project exceeded 1,000 ppm, and 20% exceeded 5,000 ppm TPH.¹
- ▶ In summary, Texaco's "cleanup" in the 1990s left the vast majority (84%) of their waste pits untouched. Where they did do some cleanup work, the methods used were ineffective at removing petroleum contamination, as proven by samples collected by numerous parties, including Chevron.

³ Cabrera Court Expert Report, Annex D.

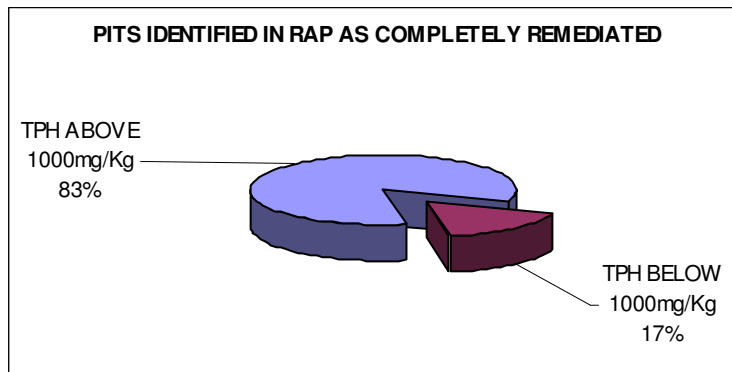
Graph 13 (Cabrera report Annex H, page 25)

Percentage of waste pits remedied by Texpet (complete remediation), pits where no further action was performed, and pits excluded from the cleanup (RAP) process



Graph 16 (Cabrera report Annex H, page 29)

TPH results in pits remediated by Texpet



DATA SHOWING THAT THE CLEANUP WAS INEFFECTIVE

Maximum TPH Results Remaining in Pits Where Texpet Conducted Remediation

Taken from Table 17 of Cabrera report Annex H, page 29. Data are from Judicial Inspections and Cabrera Investigation

#	SITE	PIT NAME	Desc	RAP COMMENT	TPH (mg/Kg)	DATA SOURCE
1	Sacha 21	PIT 1	Dry Pit	Complete	34	Texaco
2	Yuca 28	PIT 2	Oil Pit	Complete	71	Texaco
3	Aguarico 8	PIT 2	Oil Pit	Complete	<120	Expert
4	Atacapi 5	PIT 2	Water	Complete	<120	Expert
5	Shushufindi	PIT 1	Oil Pit	Complete	<120	Expert
6	Sacha 6	PIT 2	Oil Pit	Complete	200	Texaco
7	Sacha 53	PIT 2	Oil Pit	Complete	520	Texaco
8	Sacha 51	PIT 2	Oil Pit	Complete	700	Texaco
9	Sacha 51	PIT 3	Oil Pit	Complete	970	Texaco
10	Lago Agrio	PIT 1	Dry Pit	Complete	1300	Texaco
11	Shushufindi	PIT	Oil Pit	Complete	1600	Texaco
12	Shushufindi	PIT 1	Oil Pit	Complete	2000	Texaco
13	Shushufindi	PIT 2	Oil Pit	Complete	2180	Plaintiffs
14	Sacha 57	PIT 1	Oil Pit	Complete	2400	Texaco
15	Shushufindi	PIT 1	Oil Pit	Complete	2700	Plaintiffs
16	Sacha 10	PIT 1	Oil Pit	Complete	2802	Texaco
17	Shushufindi	PIT 4	Oil Pit	Complete	3000	Texaco
18	Sacha 51	PIT 1	Oil Pit	Complete	3100	Texaco
19	Shushufindi	PIT 2	Oil Pit	Complete	3133	Plaintiffs
20	Sacha 6	PIT 1	Oil Pit	Complete	3300	Texaco
21	Sacha 56	PIT 1	Water	Complete	3600	Expert
22	Shushufindi	PIT	Oil Pit	Complete	3697	Expert
23	Yuca 28	PIT 1	Oil Pit	Complete	3876	Plaintiffs
24	Auca 19	PIT 1	Dry Pit	Complete	4014	Expert
25	Lago Agrio	PIT 1	Water	Complete	4777	Plaintiffs
26	Shushufindi	PIT 1	Oil Pit	Complete	4881	Plaintiffs
27	Shushufindi	PIT 2	Oil Pit	Complete	5000	Texaco
28	Shushufindi	PIT 1	Oil Pit	Complete	5334	Plaintiffs
29	Guanta 4	PIT 1	Oil Pit	Complete	5510	Expert
30	Shushufindi	PIT 3	Oil Pit	Complete	5574	Plaintiffs
31	Sacha 94	PIT 1	Oil Pit	Complete	5600	Texaco
32	Shushufindi	PIT 3	Oil Pit	Complete	5721	Plaintiffs
33	Sacha 51	PIT 4	Soil	Complete	7200	Texaco
34	Shushufindi	PIT 1	Oil Pit	Complete	7415	Plaintiffs
35	Sacha 53	PIT 1	Oil Pit	Complete	7430	Plaintiffs
36	Sacha 65	PIT 2	Oil Pit	Complete	7519	Texaco
37	Sacha 57	PIT 2	Oil Pit	Complete	8100	Texaco

Data on Texpet's "Cleanup"

38	Aguarico 8	PIT 1	Oil Pit	Complete	8183	Expert
39	Sacha 94	PIT 2	Oil Pit	Complete	8700	Texaco
40	Lago Agrio	PIT 1	Oil Pit	Complete	8830	Expert
41	Ron 1	PIT 1	Water	Complete	9632	Expert
42	Shushufindi	PIT	Oil Pit	Complete	10452	Plaintiffs
43	Shushufindi	PIT 1	Oil Pit	Complete	10956	Plaintiffs
44	Shushufindi	PIT 2	Oil Pit	Complete	12715	Plaintiffs
45	Shushufindi	PIT 3	Oil Pit	Complete	13000	Texaco
46	Shushufindi	PIT	Oil Pit	Complete	13290	Plaintiffs
47	Shushufindi	PIT 1	Oil Pit	Complete	13587	Plaintiffs
48	Shushufindi	PIT 1	Oil Pit	Complete	16033	Plaintiffs
49	Sacha 21	PIT 2	Oil Pit	Complete	17000	Texaco
50	Atacapi 5	PIT 1	Water	Complete	21976	Expert
51	Shushufindi	PIT 1	Oil Pit	Complete	26413	Plaintiffs
52	Sacha 65	PIT 1	Soil	Complete	32444	Plaintiffs
53	Sacha 18	PIT 2	Oil Pit	Complete	35380	Expert
54	Parahuacu	PIT 1	Oil Pit	Complete	2065	Expert

DATA SHOWING THAT PITS DESIGNATED BY TEXPET AS NOT REQUIRING CLEANUP ARE IN FACT CONTAMINATED

Texpet classified 70 of the pits that they initially considered for cleanup as requiring "No Further Action" (i.e., no cleanup required). The reasons given for why no cleanup was required were:

- ▶ The pits had been previously closed by TexPet
- ▶ The local communities were using the pits as a water source or to raise fish
- ▶ There was no evidence of impacts visible at the pits
- ▶ PetroEcuador made changes to the pits after June 1990 (when Texpet ceased operations)

An additional 13 pits were left unremediated because Texpet said that PetroEcuador changed "site conditions" after the initial remediation survey work.

[From Woodward-Clyde, 2000. "Remedial Action Project Oriente Region, Ecuador. Final Report." Prepared for Texaco Petroleum Company. May.]

Maximum TPH Results in Pits that Texpet Did Not Remediate Because They Were Previously "Closed"

Taken from Table 18 of Cabrera report Annex H, page 32. Data are from Judicial Inspections and Cabrera Investigation

#	SITE	PIT NAME	Desc	RAP COMMENT	TPH (mg/Kg)	DATA SOURCE
1	Auca Sur 1	PIT 1	Closed	Previously closed	1582	Expert
2	Aguarico 10	PIT 2	Closed	Previously closed	2014	Expert
3	Sacha 85	PIT 2	Closed	Previously closed	4300	Texaco
4	Aguarico 10	PIT 3	Closed	Previously closed	8181	Expert
5	Aguarico 9	PIT 1	Closed	Previously closed	13947	Expert
6	Aguarico 10	PIT 1	Closed	Previously closed	17544	Expert
7	Sacha 85	PIT 1	Closed	Previously closed	20000	Texaco
8	Lago Agrio 1	PIT 1	Closed	Previously closed	21521	Expert
9	Auca Sur 1	PIT 2	Closed	Previously closed	40102	Expert
10	Sacha 18	PIT 1	Closed	Previously closed	41306	Expert
11	Lago Agrio 16	PIT 1	Closed	Previously closed	175095	Texaco

Maximum TPH Results in Pits that Texpet Did Not Remediate Because They Were Being Used by the Local Community

Taken from Table 19 of Cabrera report Annex H, page 33. Data are from Judicial Inspections and Cabrera Investigation

SITE	PIT NAME	Desc	RAP COMMENT	TPH (mg/Kg)	DATA SOURC
Sacha 85	PIT 4	Water Pit	Used by local community	4	Texaco
Shushufindi 45A	PIT 1	Water Pit	Used by local community	967	Plaintiff
Sacha 53	PIT 3	Water Pit	Used by local community	1700	Texaco
Shushufindi 25	PIT 2	Water Pit	Used by local community	4423	Plaintiff
Lago Agrio 5	PIT 2	Water Pit	Used by local community	20923	Expert

Maximum TPH Results in Pits that Texpet Did Not Remediate Because Texpet Classified Them as Having "No Impact Detected"

Taken from Table 20 of Cabrera report Annex H, page 34. Data are from Judicial Inspections and Cabrera Investigation

SITE	PIT NAME	Desc	RAP COMMENT	TPH (mg/Kg)	DATA SOURCE
Sacha 6	PIT 3	Dry Pit	No impact detected	2600	Texaco
Shushufindi 8	PIT 1	Closed	No impact detected	7350	Plaintiffs
Shushufindi 13	PIT 3	Closed	No impact detected	27001	Texaco
Sacha 51	PIT 5	Closed	No impact detected	63000	Texaco

Texpet's Cleanup Standard of 1,000 ppm TPH in the TCLP test

Texpet had a cleanup standard of 1,000 ppm TPH in the Toxicity Characteristic Leaching Procedure (TCLP) test. In this test, slightly acidic water is added to soil, the mixture is shaken for two hours, and the water is filtered and analyzed for contaminants. The 1,000 ppm TPH TCLP cleanup standard is extremely high, to the point of being essentially meaningless:

- ▶ Most of the chemicals in crude oil are not very soluble in water. A mixture of pure crude oil and water would produce at most about 100 ppm TPH in the water. In other words, pure crude oil would meet Texpet's cleanup standard.
- ▶ 1,000 ppm TPH in water is much, much higher than environmental standards:
 - Benzene is the most water soluble hydrocarbon in crude oil. The USEPA drinking water standard for benzene is 0.015 ppm. The Ecuadorian standard for benzene in water is 0.010 ppm.
 - State standards for TPH in groundwater are much less than 1,000 ppm TPH:

Table 8: Examples of TPH groundwater standards for selected U.S. states, ppm (From Cabrera Report, Appendix D)

State	Analyte	Standard value	Standard type
Florida	TRPH	5	Florida Cleanup Standards for Hydrocarbon Contaminated Groundwater
Indiana	TPH (waste oil)	1	Indiana Cleanup Standards for Hydrocarbon Contaminated Groundwater; Action Level and
Iowa	TEH	1.2	Iowa Action Levels for Soils and Groundwater
Missouri	TPH	10	Missouri Cleanup Standards for Hydrocarbon Contaminated Groundwater; for groundwater and
South Dakota	TPH (waste oil)	0.1	South Dakota Cleanup Standards for Hydrocarbon Contaminated Groundwater; for potential drinking
Tennessee	TPH (waste oil)	0.1	Tennessee Cleanup Standards for Hydrocarbon Contaminated Groundwater- Action and cleanup
Wyoming	TPH (waste oil, DRO)	1.1	Wyoming Cleanup Standards for Hydrocarbon Contaminated Groundwater

Source: AEHS, 2008.

- ▶ The USEPA cautions against using the TCLP test for oily waste, as the method may not give accurate results.