

Global  Environmental
Operations, Inc.

Memorandum

To: Steve Donziger
From: Dave Russell
Date: 12/27/04
Re: Mid Course Corrections and the Scope of the Global
Inspection

Let me start out with a statement. I think our carefully crafted analytical program needs to be tweaked to get more information about the contamination in Ecuador. What keeps me up at night is the possibility that I'm missing something significant which will be needed for the case. That and a mental acknowledgement that Texaco may be right when they indicate that the remediation is performing as designed, and degrading the petroleum.

First a little basis.

Petroleum is a mix of all types of compounds, from methane (natural gas) to asphalts. The TPH test used to measure Total Petroleum Hydrocarbons is essentially an tool using Infrared absorption, and it identifies various types of compounds which are considered oils. The problem is that the test does not differentiate between the presence of a petroleum hydrocarbon and a non-petroleum hydrocarbon – between crude and natural oils in the ground.

There are about 4 ranges of compounds which make up TPH: Gasoline Range Organics, Diesel Range Organics, Residual Organics and Natural Organic Oils. I know that we are seeing materials which have substantial quantities of organics in them, and substantial quantities of petroleum compounds in them, but that does not necessarily make them harmful or dangerous.

Expressed Mathematically: $TPH \cong GRO + DRO + RRO + NOO$

Now what we are analyzing is TPH and DRO. That leaves RRO, GRO, and NNO as unknowns. If you will recall, we stopped analyzing GRO at Cristobal's insistence because it helps Texaco prove their case.

The problem comes in when we look for components of the DRO's which are harmful. The PAH, or Polynuclear Aromatic Hydrocarbon compounds. These compounds are powerful carcinogens, and if present in quantity would amount to a slam dunk for proving harm to people. The problem is that so far, they are not there or are not detected, even after we lower the detection limits.

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This leaves us with the balance of the DRO's and the RRO's and the NOO's. We have only analyzed for the DRO's and part of the PAH fraction of the DRO's. The question is where is the harm? The corollary question also becomes did Texaco create a problem or solve one? I firmly believe, as you do, that they have created a problem. The difficulty is in proving it. Right now, we can't prove harm except by inference and claims that TPH is harmful, that DRO is harmful, and that RRO's are harmful. But the problem is that there is nothing specific.

This is a problem partially because we don't know what's in the DRO's and RRO's. I know that there are probably some asphaltenes in the DRO/RRO mix, but I don't know what they are, nor what they do. And without that, Texaco can say PROVE IT, and right now we can not prove harm. We need to tweak the analysis program to find the missing components

Global Inspections

The global inspections are a unique challenge because at this time they lack definition. Suppose that I told you to go into a forest and find something, but I did not tell you what, but it will damage humans and the forest, but some of the damage may not be evident. Impossible, right? Well that's not quite right, but close. That's our task.

But, depending upon what we decide as evidence of the damage, our task may be even larger. Determine the damage. But what is the damage? Is it groundwater contamination, is it vegetation? Is it humans? In order to ask the right questions we must know part of the answers, and the cost and labor required for each approach with respect to obtaining that required proof.

We have to define the extent and cost of the contamination removal, so we have to define it. Our first concern is determining the extent. In that regard, we have to ask ourselves what we do know about the existing sites where we have data. The answer to that is "Something". We have knowledge about the type of contamination but that is limited to the borings and the tests. We can infer other information from the data we have, but that's still a long way from bringing in a conclusive estimate of the damage, or from bringing home a winning technical case.

Briefly, the global inspection can be divided into four areas: soil, vegetation, waterways, and groundwater. (There is a fourth area of air impacts, but that is really hard to prove and it does not look promising for the effort involved.)

In the area of soil contamination we have a rough handle on the data inside the pits. We know little or nothing about other contamination outside the pits, nor the aeral distribution nor levels of contamination due to past spills, releases, and the ponds themselves.

In the area of groundwater, (Yes, I know it is expensive!) we have virtually no information at all. Our information base is limited to some groundwater samples collected beneath the pits and some analyses of local wellwaters. Not much to go on. We don't even know the direction of movement of the groundwater, nor the extent of any contamination plumes.

In the swamps and waterways, we have no information, despite the fact that we have inspected four patanos and found damage. (Damage from what?? There are many potential sources and we have to prove the contamination is not from pesticides but from petroleum, and that requires further analyses.) There is a lot more to a waterway than the swamp in which it originates. There is soil contamination along the bank, and in the sediments, and there is contamination of the waterway itself from continuing sources. In order to make that assessment we have to have physical measurements using equipment we don't currently possess.

The point of all the foregoing is to tell you that we have to consider what is the standard of proof. We cannot just stick a pole into the ground and find contamination, however much I would welcome that approach. I suggest a technical meeting in Quito with some of the legal team, the technical team, and assorted specialists in the groundwater and swamp/forests, and agricultural areas. The consensus of what we can look for and what the standard of proof is should be well established before we begin looking at specific elements of the Global Inspection.