

Accurate News

Vol. 1 Issue 13

Jan. / Feb. 1997

"Accurate News" is a publication of Accurate, Inc. Environmental and Laboratory Services - Stillwater, OK

Expert in the Field

Quality assurance in sample collection is just as important as QC in the lab. The goal is to obtain a sample that is truly representative of the source and that is not tainted as a result of any improper procedure in the field. An improperly sampled material could reveal a level of contamination that resulted from the sampling event itself rather than that which was originally present.

Sometimes detection limits are so low that merely the presence or absence of a particular contaminant is the ultimate concern. Even the slightest amount of field sampling contamination, no matter how unintentional, can stain a lab report and haunt a client's testing history. Operators and engineers responsible for the environmental monitoring must deal with these sometimes expensive consequences of sampling errors.

A simple example is municipal drinking water analysis and sampling for Coliform bacteria. In these samples the presence of any bacteria is a *failed* test. Just a slight touch on the lip of an otherwise sterile container or the unintended inclusion of a bit of residue from the spigot at a sample point could result in a failed test.

Another example is contamination and improper sampling which can occur at groundwater monitoring wells. If methods are not honored, an invalid sample is often

the result. When purging a well, three well volumes should be evacuated. This helps insure that all stagnant water is removed and the well is clean, leaving only groundwater which is representative of that well. Also, clean equipment is necessary. Volatile organics are easily transferred from one well to another, so dedicated bailers, and clean gloves should be used at each well. Moreover, VOCs travel easily through the air, and when detection levels are at 1 or 2 parts per billion, even exhaust fumes from a vehicle left running can taint a sample.

Follow approved methods and consult professionals when you have sampling questions...it can make all the difference.

by J. Russell and T. Unruh

JOHN RUSSELL'S HELPFUL TIPS

1. When sampling, change latex gloves frequently. This decreases the chance of cross-contamination.
2. Use water tight bags (Ziploc type) for protecting bottled water samples for Coliform bacteria analysis. The sealed sample bottle is great, but bags should be used as additional insurance against leaks and contamination.
3. Always collect the proper amount of sample in the correct container. This saves time in the field, helps the lab technician, and reduces the need for retakes.

John Russell is the Field Services Manager at Accurate Labs; he can assist you with any sampling project. Just give him a call.

TCLP: What You Should Know... (Part 3)

Having already covered basic definitions and related testing in hazardous waste characterization, in this final part of the series on TCLP, we will explain the testing methods as well as what it means to pass or fail TCLP examination.

The TCLP test is designed to simulate the landfill environment. The conditions are typically warm and acidic, and as rain water falls and a sample decomposes, leaching can occur. This leachate will trickle down to the groundwater under and surrounding the landfill.

The TCLP extraction shows the kind and quantity of leachate which could be released. For extracting solids and unfilterable liquids or sludges a small portion of the sample is mixed with DI water and then the pH of this mixture is recorded. If it is less than 5, then Extraction Fluid # 1 is used--an acidic mixture. But if the mixture is 5 pH or greater, it is prepared with acid and heated. Now, if it is still too caustic (high pH) then Extraction fluid # 2 is used--an even *more* acidic solution. This maximizes the simulated leaching process. The final leachate is prepared by tumbling the sample for 18hrs and filtering.

For liquids and filterable solids the TCLP extraction process is quite different. If the sample is less than .5% solid then it is filtered and the filtrate is treated as the final TCLP extraction to be analyzed. But, if the sample is equal to or greater than this .5% solids, the sample is filtered, the filtrate saved and the solid portion undergoes the extraction process previously described for other solids. Then, the final TCLP extraction is obtained by recombining the original filtrate and the tumbled filtrate in the correct proportions. For example if a sample is 20%

solids, then the final TCLP extract is 20% tumbled filtrate and 80% original filtrate.

After this TCLP extraction step for either solids or liquids is performed, the extract must be analyzed for the relevant parameters. Generally, for an unknown sample, a complete TCLP is needed. That is, analysis is conducted in metals, volatile organics, base neutral / acid compounds, pesticides and herbicides. Then, if any of the analyzed parameters show a result which exceeds the regulatory thresholds for this type of testing (some levels shown below), the sample *fails* the examination. The waste from which the sample was taken then is considered hazardous, not suitable for disposal in a conventional landfill.

If you have any question about TCLP testing, please call Accurate Labs. We are eager to help.

by Y. Dallenbach and T. Unruh

TCLP Inorganics	
Regulatory Levels At Which Waste Is Hazardous*	
	PPM
Arsenic	5
Barium	100
Cadmium	1
Chromium	5
Lead	5
Mercury	0.2
Selenium	1
Silver	5

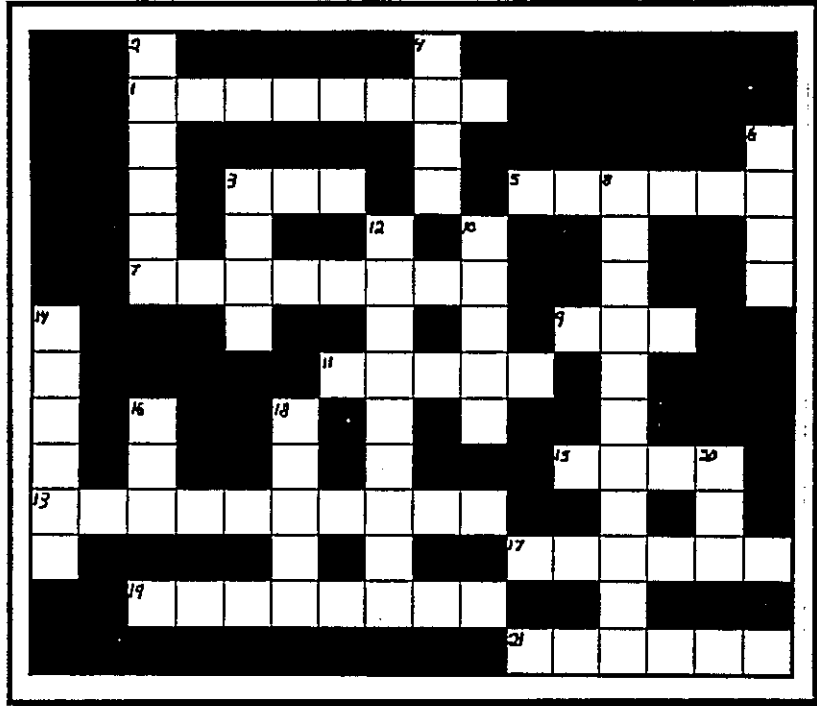
Organics			
Regulatory Levels At Which Waste Is Hazardous*			
	mg/L		mg/L
Benzene	0.5	Hexachlorobutadiene	0.5
Carbon tetrachloride	0.5	Hexachloroethane	3.0
Chlordane	0.03	Lindane	0.4
Chlorobenzene	100.0	Methoxychlor	10.0
Chloroform	6.0	Methyl ethyl ketone	200.0
o-Cresol	200.0	Nitrobenzene	2.0
m-Cresol	200.0	Pentachlorophenol	100.0
p-Cresol	200.0	Pyridine	5.0
2,4-D	10.0	Tetrachloroethylene	0.7
1,4-Dichlorobenzene	7.5	Toxaphene	0.5
1,2-Dichloroethane	0.5	2,4,5-TP (Silvex)	1.0
1,1-Dichloroethylene	0.7	Trichloroethylene	0.5
2,4-Dinitrotoluene	0.13	2,4,5-Trichlorophenol	400.0
Endrin	0.02	2,4,6-Trichlorophenol	2.0
Heptachlor (and its epoxide)	0.008	Vinyl chloride	0.2
Hexachlorobenzene	0.13		

Across

1. Pretreatment monitoring is designed to monitor _____.
3. BTEX & _____ analysis is necessary to quantify petroleum hydrocarbons in a sample.
5. Accurate analysts follow this carefully on each test.
7. The bacteria which drinking water plant operators must test for each month.
9. Federal environmental organization.
11. A system for issuing discharge permits.
13. Samples analyzed for diesel range petroleum hydrocarbons first undergo a methylene chloride or hexane _____.
15. Accurate field techs do this in order to purge and sample a monitoring well.
17. Your nose knows where to find this material at most waste water treatment plants.
19. If it's not in the influent; it probably is not in the _____.
21. EPA Table III analysis includes metals as well as Cyanide and _____, which is a hydroxyl derivative of benzene.

Down

2. Type of acid used to preserve water samples for metals analysis.
3. Testing used to simulate leaching which can occur in landfills.
4. If the sample is not a composite; it must be a _____.
6. OK agency which issues discharge permits and regulates labs.



TEST YOUR WORD POWER. . .

Accurate News CROSSWORD PUZZLE

8. pH and _____ are checked regularly at waste water treatment plants.
10. Color of glass sample container preferred when analysis for semi-volatile organics is needed.
12. Type of sample which represents the waste discharge over an extended period of time.
14. One of the 503 metals, but it isn't worth a dime.
16. A source of much petroleum contamination in soil throughout Oklahoma.
18. Type of Coliform bacteria test on waste water usually needed in the summer months.
20. To record samples when received at the lab, or the records which Accurate keeps on all of its instruments.

505 S. Lowry
Sulhwatser, OK 74074



Accurate Labs

Accurate Labs is drinking water certified!
Bacteria testing, Nitrate, Fluoride and more.
Sample pick up is available.
800-516-LABS or 405-372-5300