Rotenone Application Dissipation Schedule

		ROTENONE CONTAMINATION/DISSIPATION SCHEDULE											
					DISSIPATION								DISSIPATI
LAKE	MONTH	DATE		DESCRIPTION	WEEK			LAKE	MONTH	DATE	DESCRIPTION		WEEK
Blue Lake	October	16		Powdered Rotenone Applied		0							
Blue Lake	October	17		Powdered Rotenone Applied		0							
Blue Lake	October	18		Powdered Rotenone Applied		0							
Blue Lake	October	19		Liquid Rotenone Applied		0							
Blue Lake	October	26				1							
Blue Lake	November	1				2							
Blue Lake	November	8				3							
Blue Lake	November	15				4							
				Park Lake Flows to Blue Lake				Park Lake	November	16	Powdered Rotenone Applied		0
				2nd Application to Blue Lake				Park Lake	November	17	Powdered Rotenone Applied		0
				Dissipation starts with Park	P LK.	B LK.		Park Lake	November	18	Liquid Rotenone Applied		0
Blue Lake	November	22		Lake Count Again!	1	5		Park Lake	November	25			1
Blue Lake	November	27		**Major Wind Storm Frozen Spray**				Park Lake	November	27	**Major Wind Storm Frozen Spray**		
Blue Lake	November	29		Ice on Lake	2	6		Park Lake	December	2	Ice on Lake		2
Blue Lake	December	5		Ice on Lake	3	7		Park Lake	December	9	Ice on Lake		3
Blue Lake	December	13		Ice on Lake	4	8		Park Lake	December	16	Ice on Lake		4
Blue Lake	December	20		Ice on Lake	5	9		Park Lake	December	23	Ice on Lake		5
Blue Lake	December	27		Ice on Lake	6	10		Park Lake	December	30	Ice on Lake		6
Blue Lake	January	3		Ice on Lake	7	11		Park Lake	January	6	Ice on Lake		7
Blue Lake	January	10		Ice on Lake	8	12		Park Lake	January	13	Ice on Lake		8
	January	13		Don White saw Ice Skating on Akali Lake					January	14	Bob Arlt-Family Ice Skating on Park Lake		
Blue Lake	January	17		Ice on Lake	9	13		Park Lake	January	20	Ice on Lake		9
Blue Lake	January	24		Ice on Lake	10	14		Park Lake	January	27	Ice on Lake		10
Blue Lake	January	31		Ice on Lake	11	15		Park Lake	February	3	Ice on Lake		11
	February	**2**		**Washington State Health Completed Rotenone Investigation Complaint by Arlt**									
Blue Lake	February	7		Ice - Samples 6" to 8" Thick	12	16		Park Lake	February	10	Ice - Samples 8" Thick		12
Blue Lake	February	14		Ice on Lake	13	17		Park Lake	February	17	Ice on Lake		13
Blue Lake	February	25		Ice Beginning to Melt	14	18		Park Lake	February	24	Ice Beginning to Melt		14
Blue Lake	March	4		Ice and open water	15	19		Park Lake	March	3	Ice and open water		15
Blue Lake	March	11		Ice and open water	16	20		Park Lake	March	10	Ice and open water		16
Blue Lake	March	18		Ice and open water	17	21		Park Lake	March	17	Ice and open water		17

G-2

75 years serving the water well industry

WATER SYSTEMS COUNCIL

1932 – 2007

Tuesday, March 13, 2007

Walter Arlt
2514 Judge Ronald Road
Ellensburg, WA 98926

Dear Walter,

I have enclosed our information sheets on pesticides and drinking water treatments. To find a local water treatment company in your area please visit Water Quality Association's website at www.wqa.org. Once on their site select the link, "Find a Water Professional" and enter your state. This will pull up all the company listings in your state. You may also want to check your local Yellow Pages under "water treatment companies" for listings. For more information on wells and well water please visit our website at www.watersystemscouncil.org/wellcare/infosheets.cfm. If you have any questions please feel free to contact me.

Thank you,

Charlene Greenstreet
Hotline Specialist/Publications
Water Systems Council
1101 30th St. N.W.
Suite 500
Washington D.C. 20007
202.625.4387
fax 202.625.4363
888.395.1033 wellcare® Hotline
www.wellcarehotline.org

WELL WATER – NATURALLY BETTER®

75TH ANNIVERSARY

WATER SYSTEMS COUNCIL

1932 – 2007

wellcare® information for you about Pesticides

What are PESTICIDES?

Pesticides consist of a large group of chemicals that are used in agriculture and residential settings to control plant and animal infestation. Pesticides can range from herbicides (to control weeds), insecticides (insects), nematocides (worms) and fungicides (molds, mildews, rusts). Pesticides are commonly applied on farms, fruit orchards, golf courses and residential laws and gardens. Many pesticides also are used inside homes and other buildings.

Pesticides can enter your drinking water through several avenues. Surface water runoff can carry pesticides from agricultural fields, golf courses and residential properties into lakes, rivers and reservoirs. Rain and snow can carry pesticides through the soil into groundwater. Improperly disposed pesticides also can be carried through soil to groundwater. And improperly applied pesticides for termites can seep into well water, especially if the well is close to the house or the well casing is cracked.

Some pesticides do not break down easily in water and can remain in the groundwater for a long period of time. The insecticide DDT, though banned for nearly 20 years, can still be found in trace levels in some groundwater.

What are the health effects of Pesticides?

The potential health effects of pesticides depend upon the kind and amount of pesticide, how long the person has been consuming the water and the person's overall health. Acute pesticide poisoning symptoms may include headaches, dizziness, stomach and intestinal upset, numbness of extremities, spasms, convulsions and heart attacks.

The levels of pesticides typically found in drinking water usually are quite low and would not be likely to cause harmful health effects. However, the health effects from exposure to small amounts of pesticides in drinking water over a long period of time are not well understood and need to be studied further.

There are approximately 50,000 different pesticide products, composed of more than 600 active ingredients, used in the United States. The U.S. Environmental Protection Agency (EPA) is working on reevaluation of all pesticides registered before 1972 to bring them up to modern health standards. EPA also requires extensive testing of new products before they come on the market.

How do I test for Pesticides?

There are several different laboratory tests that look for pesticides in drinking water. Each of these tests can detect different kinds of pesticides. Because these tests can be expensive, you should test your well only for those pesticides you have reason to believe may be contaminating your well. A first test for nitrates can indicate a need to test further for pesticides (see below). Contact your local health department for a list of state-certified laboratories in your area.

Report any test results that exceed the EPA's maximum contaminant level to your local health department. They will be able to investigate the source of the contamination and see if other wells around you are also contaminated.

What is the treatment for Pesticides in drinking water?

The Cornell University Cooperative Extension* offers the following steps to help you evaluate the potential for pesticide contamination of your well and select a treatment option:

Evaluate the proximity of your well to areas of pesticide use

- Determine if wells in your area have been sampled and if pesticide contamination was detected.
- Determine location of areas where pesticides of concern have been used. Wells located on or near farms are more likely to become exposed to pesticides than in other areas.

- Determine general direction of groundwater movement from these areas. (Groundwater flow generally follows surface contours, moving from higher areas toward lower areas such as rivers, lakes and marshes.)
- The potential for pesticide contamination in your well probably is higher if pesticides are detected in other nearby wells or if your well is located within a mile downhill from areas where pesticides are used on coarse, permeable soils.

Evaluate the construction of your well

- Check with a water well professional about having your well and well casing inspected for sanitary construction.
- Determine the depth of the well into the water table. (This is approximately equal to the depth of standing water in the well.)
- Shallow wells, such as those with less than 30 feet of casing or less than 10 feet of standing water in the well pipe, have a greater potential for contamination. However, even properly constructed deep wells may become contaminated under certain conditions.

Test for nitrate contamination

- High nitrate levels often are found in wells with pesticide contamination, although low nitrate levels do not assure absence of pesticides. Your local health department or Cooperative Extension office can provide information on how to get your water tested.

If your well tests positive for pesticide contamination

- Immediately switch to bottled water until the problem is solved.
- Ask your well professional if you should drill a deeper well or pursue a water treatment option.
- Treat the water with either a granulated activated carbon (GAC) filter system or a reverse osmosis system.

To avoid pesticide contamination, practice informed and careful pest control. Pesticides should be properly used, stored and disposed of, in accordance with manufacturer's instructions. Before hiring a pesticide company, make sure that the applicator is state-certified and follows state and federal handling and disposal guidelines.

For more information about Pesticides in drinking water

Nancy M. Trautmann and Keith S. Porter, Center for Environmental Research, and Robert J. Wagenet, Department of Agronomy, Cornell University, *Pesticides: Health Effects in Drinking Water,* http://pmep.cce.cornell.edu/facts-slides-self/facts/pes-heef-grw85.html

New Jersey Department of Health and Senior Services Consumer and Environmental Health Services, *Facts: Pesticides in Drinking Water,* www.state.nj.us/health/eoh/hhazweb/pest.pdf

Wisconsin State Laboratory of Hygiene, Environmental Health Division, *Pesticides in Drinking Water,* www.slh.wisc.edu/ehd/pamphlets/pesticide.php

For more information on your drinking water

The following sites provide up-to-date information on efforts to protect drinking water supplies and steps you can take as a private well owner:

NSF International, www.nsf.org / Water Quality Association, www.wqa.org

For more information about wells and other wellcare® publications

wellcare® is a program of the **Water Systems Council (WSC).** WSC is a national nonprofit organization dedicated to promoting the wider use of wells as modern and affordable safe drinking water systems and to protecting ground water resources nationwide. Well owners and others with questions about wells or well water can now call the new wellcare® **hotline at 888-395-1033** or visit **www.watersystemscouncil.org**

This publication was developed in part under Assistance Agreement No. X-82849101-4 awarded by the U.S. Environmental Protection Agency. It has not been formally reviewed by EPA. The views expressed in this document are solely those of WSC. EPA does not endorse any products or commercial services mentioned in this publication.

wellcare® information for you about

Drinking Water Treatments

If test results come back positive for water contamination, you must select a treatment option to improve the quality or safety of your drinking water. As a private well owner, you are responsible for taking the right steps to keep your water clean and pure.

Well owners may choose from four primary options for water treatment:

- Disinfection of the well to eliminate bacteria.
- Point of use treatment, usually under the kitchen sink, to filter contaminants from drinking and cooking water.
- Point of entry, usually at point where well water enters home plumbing system.
- Multiple treatments for the household water system, usually near your water storage tank, to filter multiple contaminants or improve water quality for all household uses.

Contact your local health department, cooperative extension service, state health or environmental agency or your well professional for guidance in selecting the most effective and efficient water treatment system.

Selecting Water Treatment Options

The more you know about the quality of your water and what treatment may be needed, the more likely you will be to avoid unnecessary, costly or inappropriate equipment.

Table 1: Water Contaminants and Treatment Options

Contaminant	Recommended Treatment
Arsenic	Point of Use: reverse osmosis, distillation or cartridge-type removal devices
Bacteria	Disinfection: chlorine, ultraviolet light or ozone treatments
Chromium	Point of Use: coagulation, ion exchange, reverse osmosis or lime softening
Iron	Multiple: shock chlorination, water heater modification, activated carbon filter, oxidizing filter or oxidizing chemical injection. Tests will determine best treatment.
MTBE (methyl tertiary butyl ether)	Contact your state health department or well professional.
Nitrate	Point of use: ion exchange, electrodialysis or reverse osmosis
Radium	Point of use: ion exchange and reverse osmosis
Radon	Point of use: aeration devices or granular activated carbon (GAC) filters
Sulfur & Manganese	Point of use: sulfur – distillation, reverse osmosis or ion exchange; manganese and hydrogen sulfide – shock chlorination, water heater modification, activated carbon filter, oxidizing filter or oxidizing chemical injection
TCE (trichloroethylene)	Point of use: packed tower aeration (GAC filter with reverse osmosis distillation)

Only one water treatment – shock chlorination – is managed easily at home with a common household chemical, bleach. Most other treatments require the service of a home water treatment professional. You can check the telephone directory for listings or ask your well contractor to refer you to a treatment company.

Before purchasing a water treatment device, ask if it has been approved by NSF International, a non-profit group that develops standards for equipment related to public health. NSF International certifies water treatment devices as effective in removing specific contaminants.

It is important to monitor and carefully maintain all Point of Entry (POE) and/or Point of Use (POU) treatment systems. These systems typically use a filtering system that needs changing on a regular basis much like the filter screen on your furnace. Failure to maintain a POE or POU can result in the growth of bacteria or ineffective filtering which may allow contaminants to enter or stay in your drinking water. Maintaining the filter is easy and low cost and is important to safeguarding the health of your household.

Table 2: Household Water Cleanup Options and Estimated Costs

Water Treatment System	Estimated Costs
Activated carbon filtration	Faucet-mounted $25-50 Under the sink $50-300 Whole house $500-800
Distillation	Countertop $300-350 Automatic $600-800
Ion exchange	Whole house $500-800
Reverse osmosis	Single tap $400-600
Bottled water	$7 to $15 weekly for a family of four
New well	$3.50 to $4.50 per inch diameter per foot of depth, plus casing and pump costs
Public system	$12,000+ per household hookup depending on distance to water main, plus monthly water payments

* Chart prepared by Virginia Water Resources Research Center, Blacksburg, Virginia, 1996

Glossary of Water Treatments

Like water testing, you must approach water treatments as a smart shopper. Understand which treatments and devices are recommended for your specific drinking water problem and at what scale. Do you need a point-of-use filter on the kitchen tap or a whole house system to treat all the water your family uses? This glossary will help you understand the terms used by water treatment professionals.

Aeration

Water is mixed with air by spraying or cascading, then the air is vented from the water. Closed aeration uses pressure to remove molecules, while open aeration uses gravity to remove gases.

Activated Carbon Filter
A highly porous, absorbent material, usually made from coal or wood, is used to filter contaminants, such as excess chlorine, and to reduce soluble materials, such as organic chemicals and radon.

Activated Carbon Block Filter
Activated carbon is molded into a cartridge filter with a much greater absorption capacity and speed than a granular carbon filter. Specialized media may be added to target specific contaminants.

Chlorination
Chlorine is added to water to destroy unhealthy bacteria and control microorganisms and to remove dissolved iron, manganese and hydrogen sulfide. Shock chlorination of a private well uses concentrations of chlorine that are 100 to 400 times the amount found in municipal water supplies. The highly chlorinated water is held in the pipes for 12 to 24 hours before it is flushed out and the system is ready for use again. (See also Disinfection.)

Coagulation
Chemicals neutralize the electrical charges of fine particles (contaminants) in water, making it easier to remove the particles by settling, skimming, draining or filtering.

Disinfection
Chemicals such as chlorine, iodine, ozone or hydrogen peroxide are used to destroy disease-producing bacteria without eliminating all microorganisms. Treatment also may involve steps such as distillation, microfiltration, ultrafiltration, boiling or the use of ultraviolet light. (See also Chlorination.)

Distillation
Organic and inorganic contaminants are separated from water through a combination of evaporation, cooling and condensation.

Electrodialysis
An electric current is used to remove ions (an atom or group of atoms) from water through a semi-permeable membrane (which allows select molecules to pass and blocks others).

Ion Exchange
A water softening process in which ions (an atom or group of atoms) from a solid medium, usually a resin, are exchanged for ions in water. Positive charged ions are known as cations. Negative charged ions are known as anions. An undesired effect of ion exchange is the addition of sodium to the treated water, a consideration for those on a low-sodium diet.

Lime Softening
Slaked lime is added to water to reduce hardness, which is filtered out.

continued on next page

Disinfection: Using Shock Chlorination to Remove Bacteria

Bacterial contamination of drinking water is very common. Studies show that more than 40 percent of private water supplies are contaminated with coliform bacteria, which can cause gastrointestinal illnesses. You should test for bacteria yearly, usually in the spring, or if there is any change in the taste, color or odor of your drinking water.

If your water tests positive for coliform bacteria, take the following steps to disinfect your well:

Step 1: Use a chemical disinfectant, such as chlorine granules, tablets or liquid chlorine. Household bleach is fine, provided it is not perfumed. Follow the printed directions exactly (or ask for instructions for your well driller or local health department).

Step 2: Pour the proper amount of chlorine bleach or powdered chlorine, dissolved in a small amount of water, directly into the well.

Step 3: Connect a garden hose to a nearby faucet and wash down the inside of the well.

Step 4: Open each faucet one by one and let the water run until a strong odor of chlorine is detected. If a strong odor is not detected, add more chlorine to the well.

Step 5: Let the water stand in the household water system for at least 12 to 24 hours.

Step 6: Flush the system of the remaining chlorine. Start by turning on outside faucets and letting them run until the chlorine smell dissipates. Let the water run on the ground to reduce the load on your septic system. Finally, run the indoor faucets until the system is completely flushed.

Step 7: Retest your water supply for bacteria after one to two weeks. If shock chlorination has not eliminated the bacteria problem, you may need a continuous disinfection system.

Note: Be careful when handling concentrated chlorine solutions. Wear rubber gloves, goggles and a protective apron. If chlorine accidentally gets on your skin, flush immediately with clean water. Never mix chlorine solutions with other cleaning agents or ammonia or toxic fumes will form.

Oxidizing Filter

A type of filter that changes the balanced state of dissolved molecules, making them insoluble and, therefore, filterable.

Oxidizing Chemical Injection

Agents such as oxygen, ozone, chlorine or peroxide are used to attract electrons so they can be removed from water.

Reverse Osmosis

Pressure is used to force water molecules through a semi-permeable membrane (it allows select molecules to pass and blocks others). The pressure forces the molecules to flow in the reverse direction, moving from a concentrated solution to a dilute solution, hence diluting their presence in the water. To make these devices effective, water may need to be pretreated with chlorine or oxidation.

Maintaining Water Treatment Devices

Treatment systems must be properly maintained to ensure water quality. Most filter cartridges, membranes or ultraviolet lights must be replaced at least once a year. Ask about maintenance needs before your water treatment system is installed. Then, keep accurate maintenance records and test systems and the treated water regularly.

For more information on your drinking water

The following sites provide up-to-date information on efforts to protect public water supplies and steps you can take as a private well owner:

Home*A*Syst Program	www.uwex.edu/homeasyst
Water Quality Association	www.wqa.org
The Groundwater Foundation	www.groundwater.org

For more information about wells and other wellcare® publications

wellcare® is a program of the **Water Systems Council (WSC).** WSC is a national nonprofit organization dedicated to promote the wider use of wells as modern and affordable safe drinking water systems and to protect ground water resources nationwide.

Contact us at 888-395-1033 or visit www.watersystemscouncil.org

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G-3

Important Rotenone and Park Lake Information Notes
March 26, 2007

Visited Irrigation Sales and Service in the morning looking for the well pesticide specialist. The name is Josh Johnson.

We have been working on Rotenone filtration or reverse osmosis water purification. In a discussion on the phone first, he asked if the pesticide Rotenone dissolved and I said it did. His reply was those chemicals that dissolve and become a part of the water are very difficult to filter. If this was the case then a charcoal filter would not work.

This led to the reverse osmosis water purification with a membrane. We discussed the application of liquid Rotenone and the associated chemicals of acetone etc. and he said that would eat the membrane used for the purification process and that would not work either.

His next statement was if something that could be found that would work the company would probably not be interested in correcting this because of potential failure and the responsibility should their equipment fail in attempting to correct the contamination.

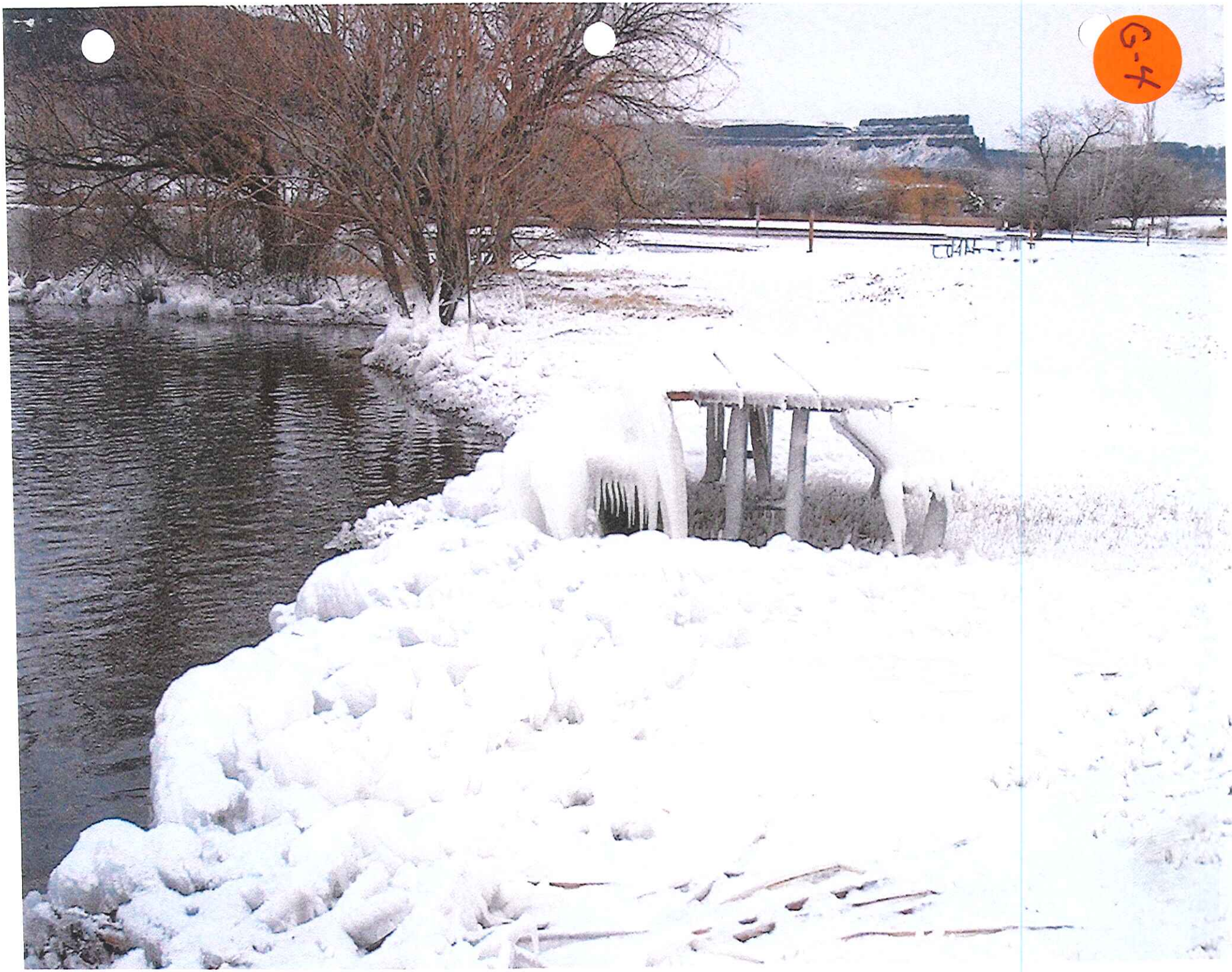
The next statement left me shattered. This being if Rotenone or Rotenone like substances had enters our domestic system that more than likely it would still be in the system and there was no way to get it out other than flushing it with lots of water. This also means that if the aquifer is contaminated and has not been pumped that more than likely it is still contaminated.

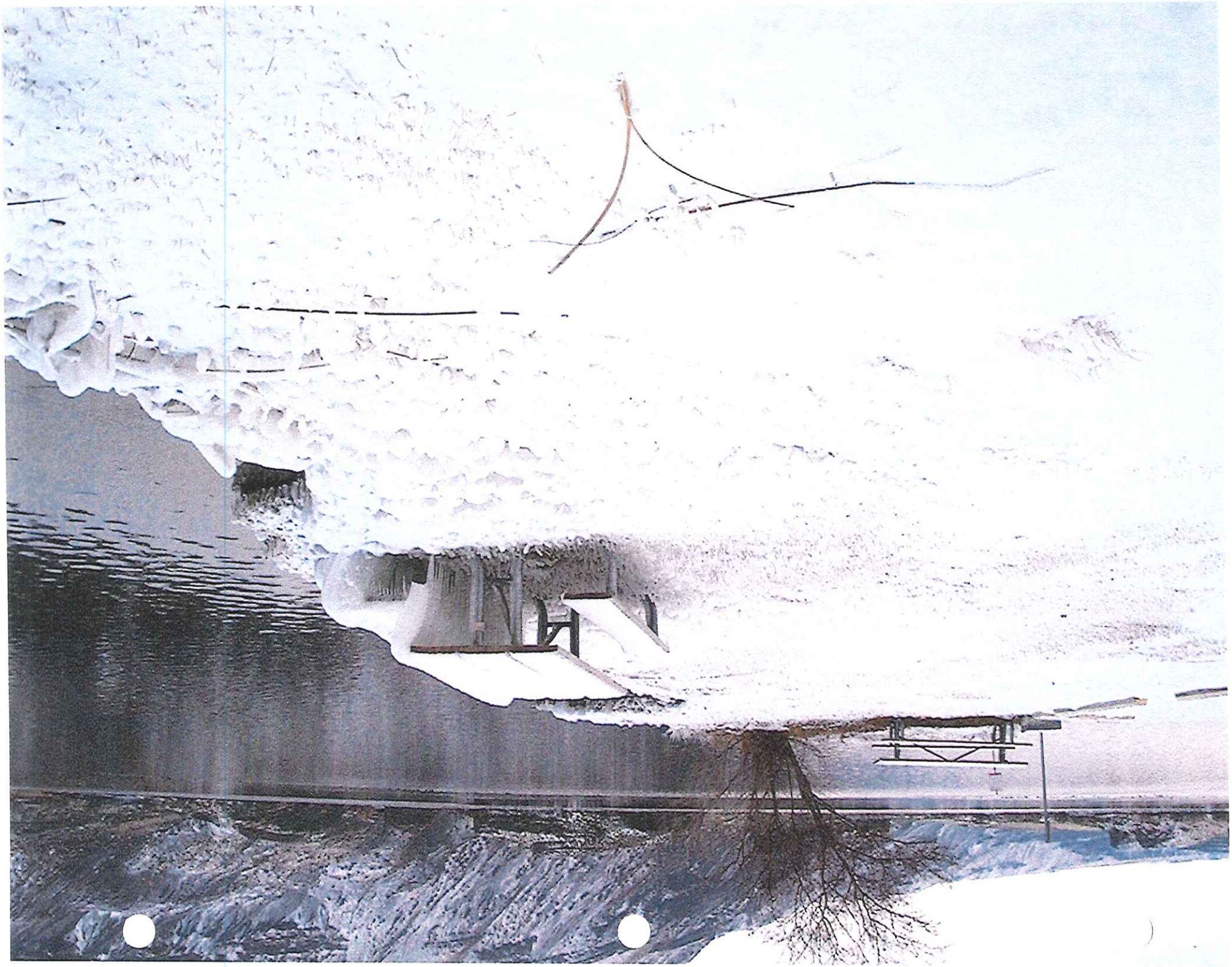
He suggested we need to clear out the Rotenone and run the heck out of the pump first. This only works if the aquifer is clean of Rotenone.

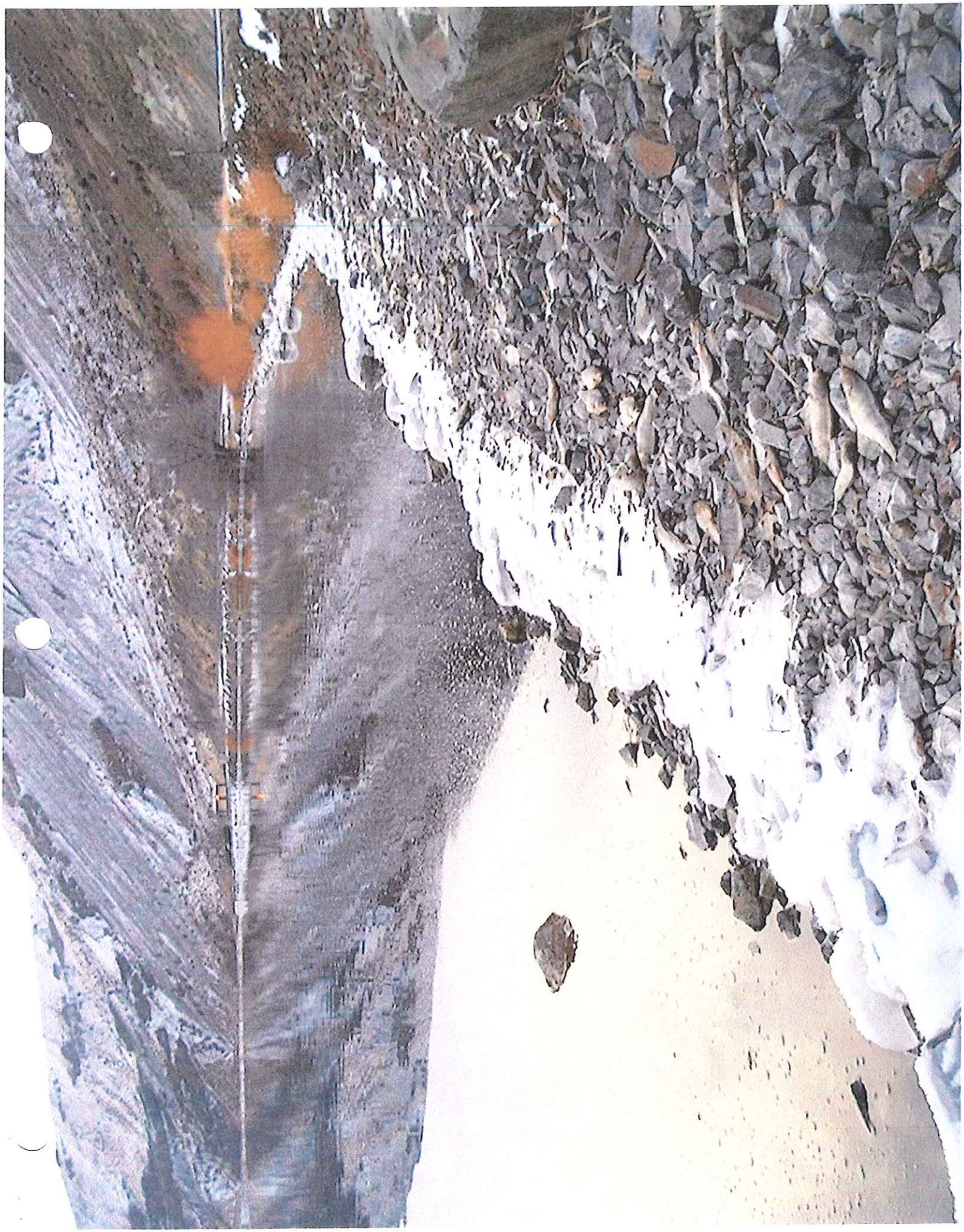
He also suggested the problem forth coming was bacteria from the dead fish with the rising temperature which would raise the bacterial levels in the lake thus bringing those problems into our well.

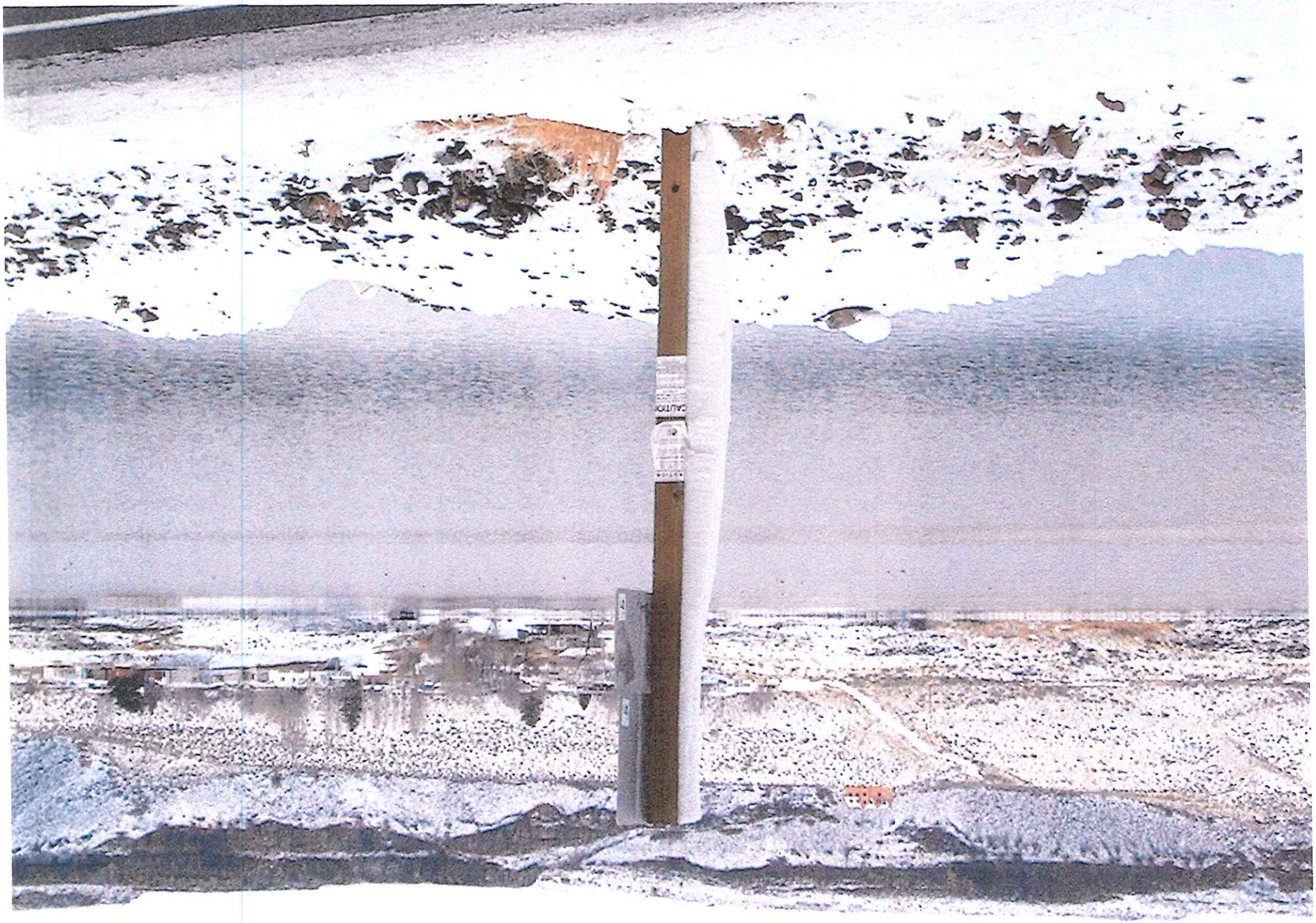
He suggested a UV Bacteria module that consists of a metal tube with a UV light in it to kill off the bacteria as it comes into the house. I asked him to check into that and see if it would be effective in this case and to see what the costs would be. He is checking on that and the costs for the unit.

Summary:

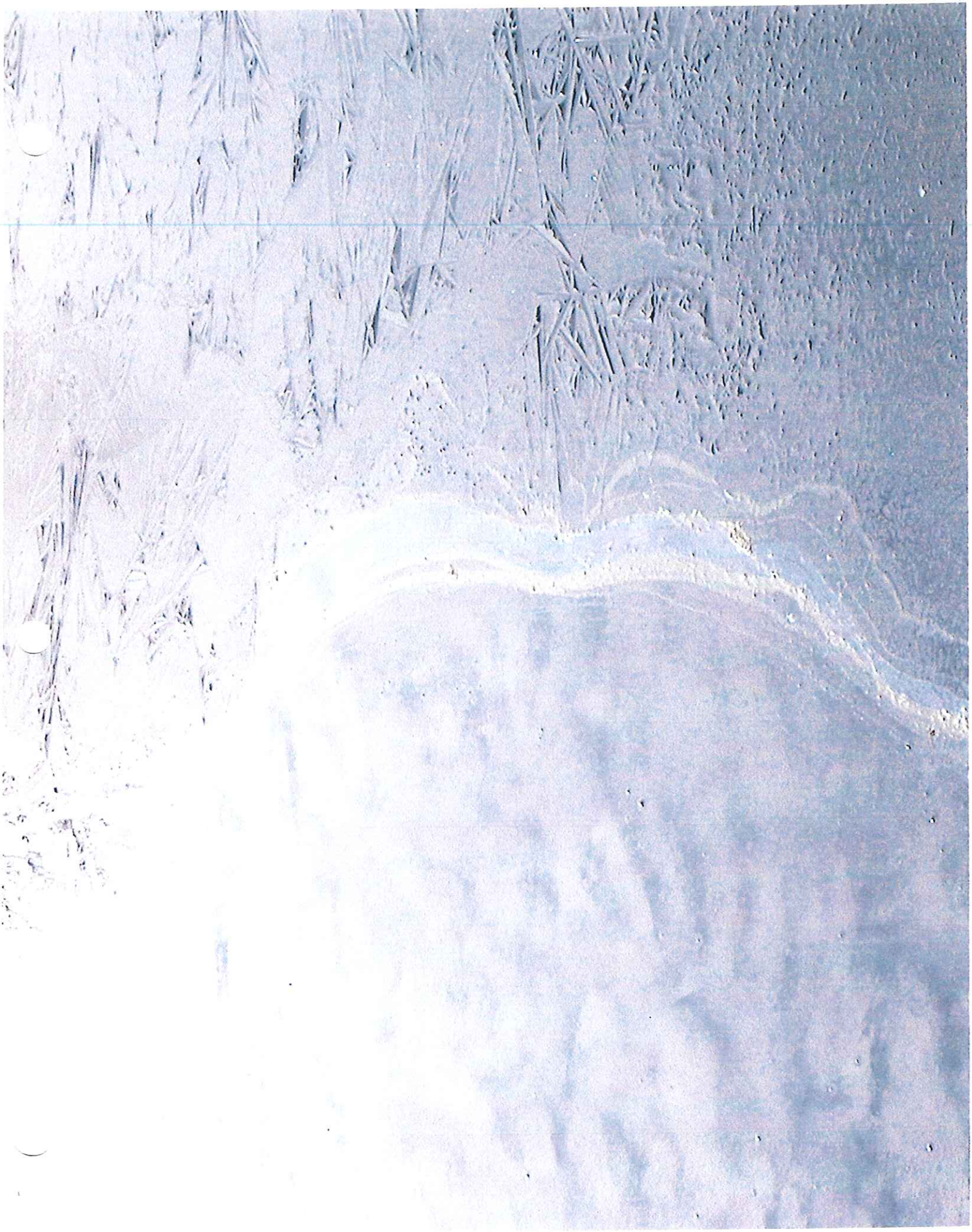

G-4






CAUTION

G-5



G-6 **Arlt**

From: Carol Turcotte [TURCOCMT@DFW.WA.GOV]
Sent: Friday, January 18, 2008 2:40 PM
To: rickb@ccilabs.com
Cc: spikearlt@fairpoint.net
Subject: chromatographs for WDFW rotenone applications
Attachments: arlt_test_authorization_07460.pdf

January 18, 2008

Mr. Rick Bagan
CCI Analytical Laboratories, Inc.
8620 Holly Drive
Everett, WA 98208

PHONE: 425 356-2600
out today! Jan. 22. No Charge

Rick,

As I discussed with you by telephone today, the Washington Department of Fish and Widllife (WDFW) has received a public records request from Walter Arlt for chromatographs from fall of 2006 rotenone applications.

WDFW contracted with CCI Analytical Laboratories for this water sample anaylsis. CCI provided analytical results to WDFW in a report format. A copy of the report was given to Mr. Arlt. As he states in the attached letter, Mr. Arlt would like to have the gas chromatography/mass spectrometry plots associated with the report.

WDFW authorizes CCI to release the chromatographs of WDFW's fall 2006 rotenone applications to Mr. Arlt. On page two of the attached letter, Mr. Arlt lists several CCI job numbers as reference.

From our telephone conversation, it is my understanding WDFW will incur no costs for the release of this data to Mr. Arlt. Please confirm.

The data can be forwarded directly to:

Walter Arlt
2514 Judge Ronald Road
Ellensburg, WA 98926
spikearlt@fairpoint.net

Please contact me if you have any questions or require additional information before forwarding information to Mr. Arlt.

Thank you.

Carol Turcotte
WDFW Public Disclosure Officer
1111 Washington Street SE (office location)
600 Capitol Way North (mailing address)
Olympia, Washington 98501-1066
(360) 902-2253
turcocmt@dfw.wa.gov

January 17, 2008

Ms. Carol Turcotte
Public Disclosure Officer
Department of Fish and Wildlife
Olympia, WA 98501-1091

Ms. Turcotte,

This letter is in response to your letter (attached) and our phone conversation on January 17th.

We, the Arlt Family Limited Partnership, request authorization to directly release gas chromatography/mass spectrometry graphs from CCI ANALYTICAL LABORATORIES to us.

We have submitted a public disclosure request and understand that we cannot receive documents from Fish and Wildlife that are not available as indicated in your attached letter. Therefore we make this formal request.

We are interested in the gas chromatography/mass spectrometry plots as they are a part of a state contract test analysis program submitted to a private corporate test facility (public information under contract) with CCI ANALYTICAL LABORATORIES to detect and determine identities and concentrations for volatile chemicals in rotenone applications. CCI did the water sample analysis and sent reports back to Fish and Wildlife. If Washington State Department of Fish and Wildlife contained this testing expertise and equipment it would all be under public disclosure. Since they do not, but contract this out, we believe we have the right to formally request any missing pieces of testing procedures or data/information that is not normally found in a report for this contracted testing.

These contaminating chemicals used for lake rehabilitation and the contracted test analysis are funded by Washington State taxpayers and Fish and Wildlife license revenue. This is unquestionable public information for human health and the environment.

Specifically we are requesting the gas chromatography retention time chromatograms and the mass spectrometry mass spectra plots associated with these tests. Normally these chromatographs and mass spectra are not a part of test reporting processes unless requested. To us these graphs are vital to understanding the poisonous chemicals in the water samples submitted for analysis.

We have contacted CCI by phone recently and they have the requested chromatographs and mass spectra plots. They told us they could not release them to us directly without proper authorization from the Washington State Department of Fish and Wildlife.

We are requesting that authorization, from a person of authority in Fish and Wildlife, to directly receive the plots from CCI ANAYLITICAL LABORATORIES.

Please send a letter of authorization for release of these graphs to CCI and a copy to Walter Arlt.

We are requesting these graphs from CCI to be sent either in hard copy or electronic file format. The request includes all chromatographs for the fall of 2006 rotenone applications. The chromatographs were made during CCI test analysis of water samples that were submitted for VOC testing.

These water samples include the following CCIL JOB #'s: (some numbers will have two graphs for two separate test types with the same job number.)

0611089, 0612090, 0612089, 0703126, 0610165, 0611099, 0610032, 0611034, 0610031, 070111, 0610070, 0611950, 0610031, 0610011, 0610164.

The purpose for requesting the gas chromatography/mass spectrometry graphs is to obtain all complete test analysis data/information in graphic form for each water sample tested. Presently we only have the text form data/information available from a former public disclosure request for comparison and review. These graphs will provide information that may not be found or available in normal text data report format for each individual water sample analysis.

If you have any questions, please contact me.

Thank you,

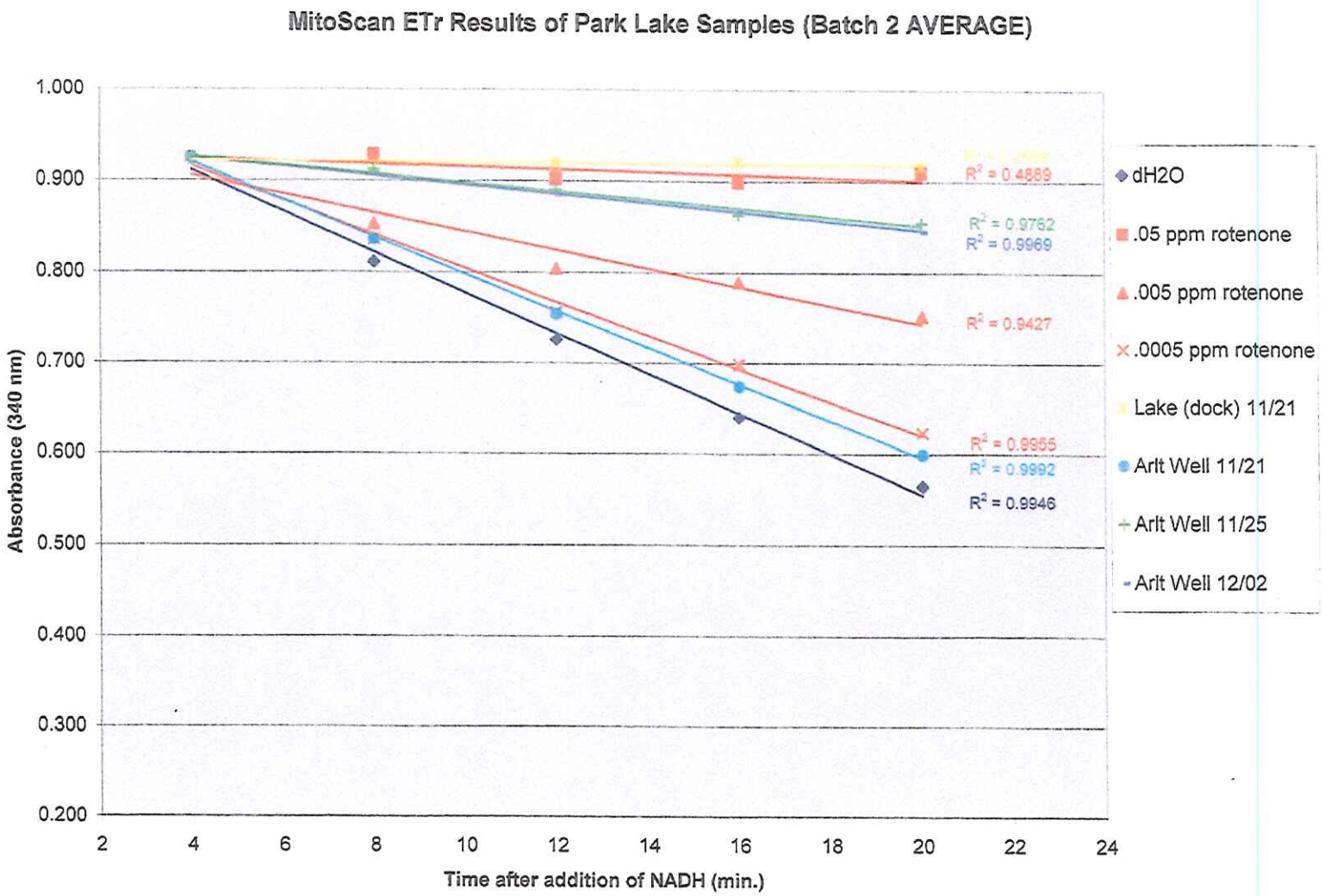
Walter "Spike" Arlt

Walter "Spike" Arlt
Managing Partner
Arlt Family Limited Partnership
2514 Judge Ronald Road
Ellensburg, WA 98926

Phone: 509-925-2761

E-mail: spikearlt@fairpoint.net

G-7


MitoScan ETr Results of Park Lake Samples (Batch 2 AVERAGE)
Absorbance (340 nm)
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
2
4
6
8
10
12
14
16
18
20
22
24
Time after addition of NADH (min.)
R² = 0.4889
R² = 0.9762
R² = 0.9969
R² = 0.9427
R² = 0.9955
R² = 0.9992
R² = 0.9946
dH2O
.05 ppm rotenone
.005 ppm rotenone
.0005 ppm rotenone
Lake (dock) 11/21
Arlt Well 11/21
Arlt Well 11/25
Arlt Well 12/02

G-8

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
Division of Environmental Health
Office of Environmental Health Assessments

243 Israel Road S.E. Town Center 3, P.O Box 47846, Olympia, Washington 98504-7846
Tel: 360.236.3184 □ Toll Free: 1.877.485.7316 □ FAX: 360.236.2251
□ TDD Relay Service: 1.800.833.6388

March 29, 2007

Walter Arlt
2514 Judge Ronald Road
Ellensburg, Washington 98926

Dear Mr. Arlt:

I am writing in response to your concern about the safety of your drinking water at your Park Lake home following rotenone treatment of the lake. A water sample collected from your well by Washington Department of Agriculture on 11/17/06, the day after Park Lake treatment began, showed no rotenone above the detection limit of 0.003 ppm (parts per million).

On February 26, 2007, you provided me a single graphic entitled "MitoScan ETr Results of Park Lake Samples." This graph is plotted in Microsoft Excel with scale of absorbance on the y-axis and time in minutes on the X-axis. You declined to provide any further information on the sample collection method, the duration or manner of sample storage, or any of the quality assurance and quality control measures that typically accompany environmental testing. You did not provide the raw data for this run or any replicates. You referred me to the MitoScan website for further information on the testing system.

I have since contacted Mitoscan and was transferred to Harry Read. I learned that the results you provided to me were probably obtained using their MitoScan Electron Transfer Test kit. This kit can not positively identify or quantify rotenone in water. It is, however, sensitive to roteneone. MitoScan did not collect the samples, conduct the test or plot the results. Rather they send customers a kit with instructions on how to conduct the assay and plot the results. Mr. Read could not confirm that the assay had been run properly or that the results were plotted properly but he did say the results looked reasonable to him. Mr. Read also informed me that the primary endpoint of this test is the

rate of decrease in absorbance over time. This endpoint of the test (the slope of the line) was not calculated nor is it easy to calculate from the graphic provided. The slope of the line is necessary to calculate the second endpoint of the test: the percent inhibition relative to control. It is also not clear that the y-axis is a log scale as directed.

Because of the many unknowns here, it is difficult for me to offer any interpretation based on the graphic you provided. Even if full information were provided, I can not compare the results of your test assay with water concentrations that might be of human health concern. This is because your test did not quantify the amount of rotenone in units of milligrams rotenone/liter of water or in parts per million (ppm). If you do decide to test further in order to positively identify and quantify rotenone in your water, I have researched some health-based guidelines for you. All are in the units of ppm.

- There is no established drinking water standard for rotenone in the US.

- In 1983, the National Academy of Sciences suggested that 0.014 ppm of rotenone was a safe level in drinking water.

- More recently (Jan 2006), US EPA proposed health-based acceptable exposure levels in the Phase 3 Health Effects Chapter of the Rotenone Reregistration Eligibility Decision Document. This is available on-line on the EPA website. In this health risk assessment, EPA proposed 0.015 mg/kg/day (milligrams rotenone/kilogram body weight/day) as an acceptable dietary exposure for short-term to intermediate periods. For chronic rotenone exposure over a lifetime, EPA proposed an acceptable dietary exposure of 0.0004 mg/kg/day.

I derived a health protective value for drinking water based on EPA's proposed acceptable dose for short and intermediate periods, standard assumptions for body weight and the amount of drinking water consumed per day, and an assumption of 365 days of continuous exposure in tap water. The standard calculations from the EPA Exposure Factors Handbook yielded a health protective value of 0.27 ppm of rotenone in drinking water. This means that concentrations of rotenone below 0.27 ppm in drinking water would not trigger a health concern for adults or children.

More conservative estimates based on worst-case scenarios are sometimes used as general screening values for health concern. Using EPA's chronic acceptable dietary dose and the same standard assumptions, we can derive a health protective value for chronic rotenone exposure (365 days/year x 70 years). These screening values would be 0.013 ppm in drinking water for average adults and 0.007 ppm for children. These are close to the National Academy of Sciences and California reporting levels.

The assumptions in the latter chronic exposure assessment substantially overestimate the potential rotenone exposure to you and your family. There is no long-term rotenone presence expected following a lake treatment so an assumption of chronic exposure over

70 years is unrealistic. In addition, this is a vacation home so this is not the sole drinking water source for anyone in your family 365 days per year. The short-term protective value of 0.27 more closely approximates your exposure situation and would be the more appropriate estimate to use in this case.

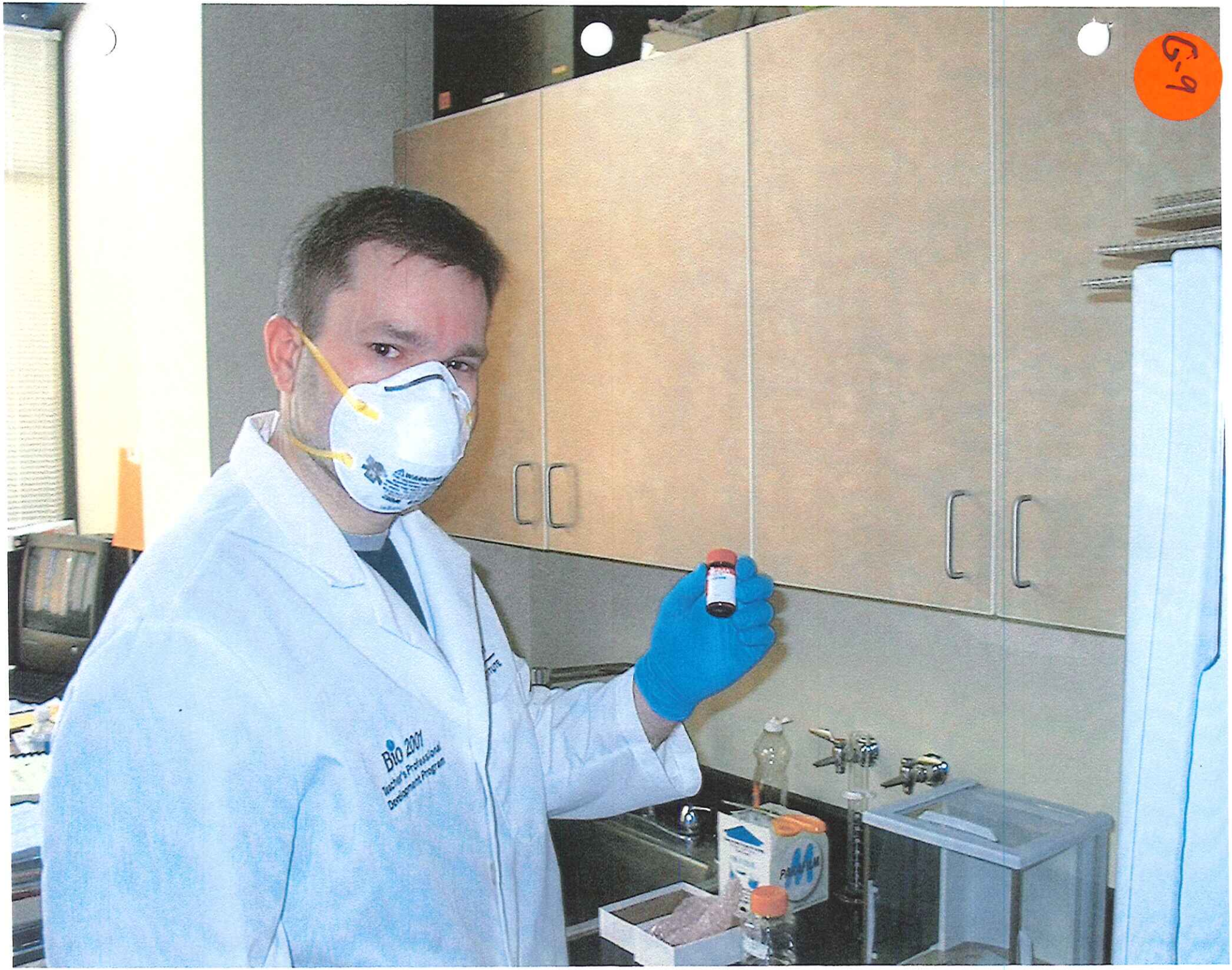
I hope this information is helpful to you in interpreting any future testing on your well. It appears that the detection limit of the WSDA laboratory is sufficient to detect levels of health concern regardless of which estimate you use.

Sincerely,

Barbara Morrissey

Barbara Morrissey
Toxicologist
Pesticide Program: Illness Monitoring and Prevention

cc: Scott Torpie, Office of Drinking Water, DOH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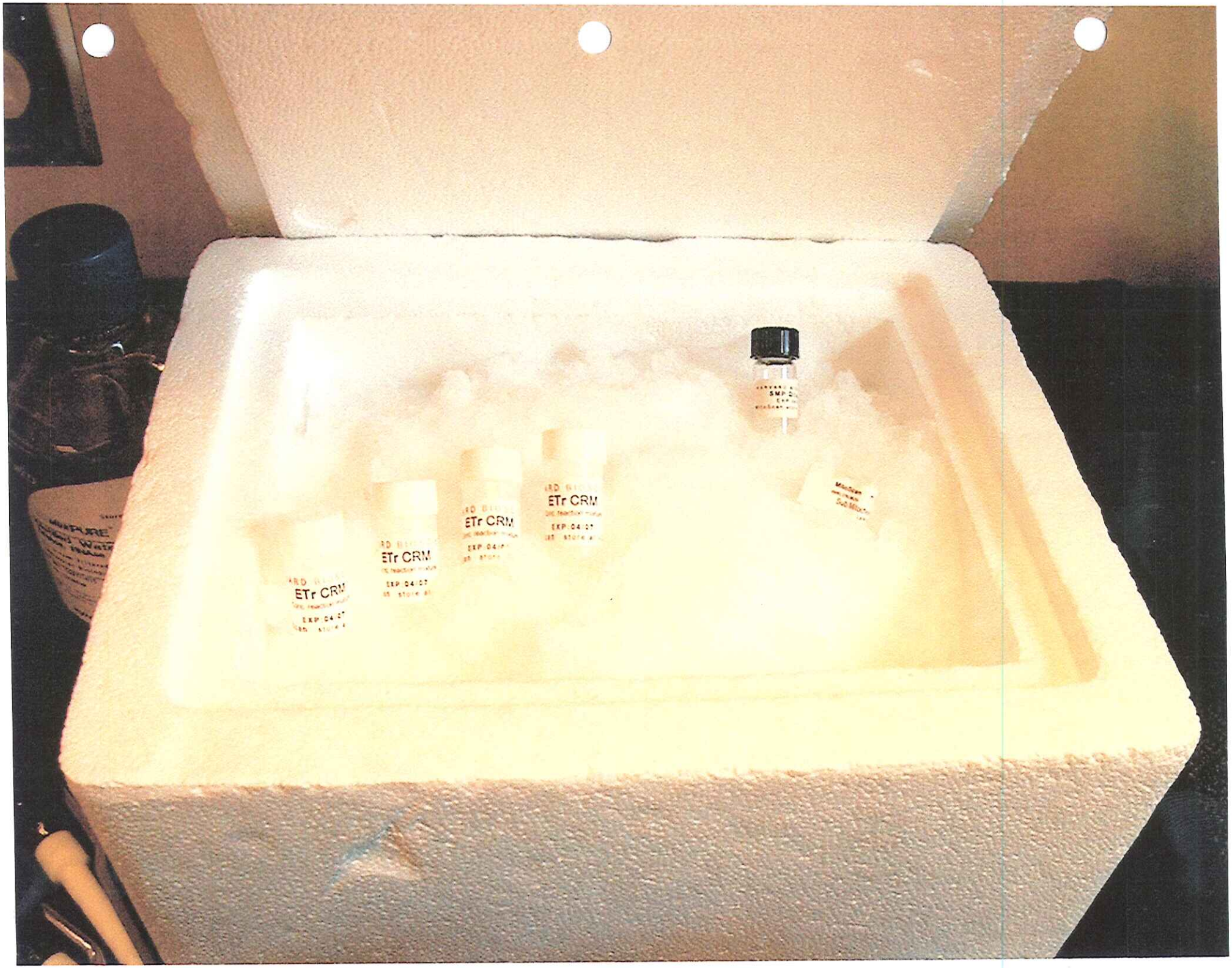
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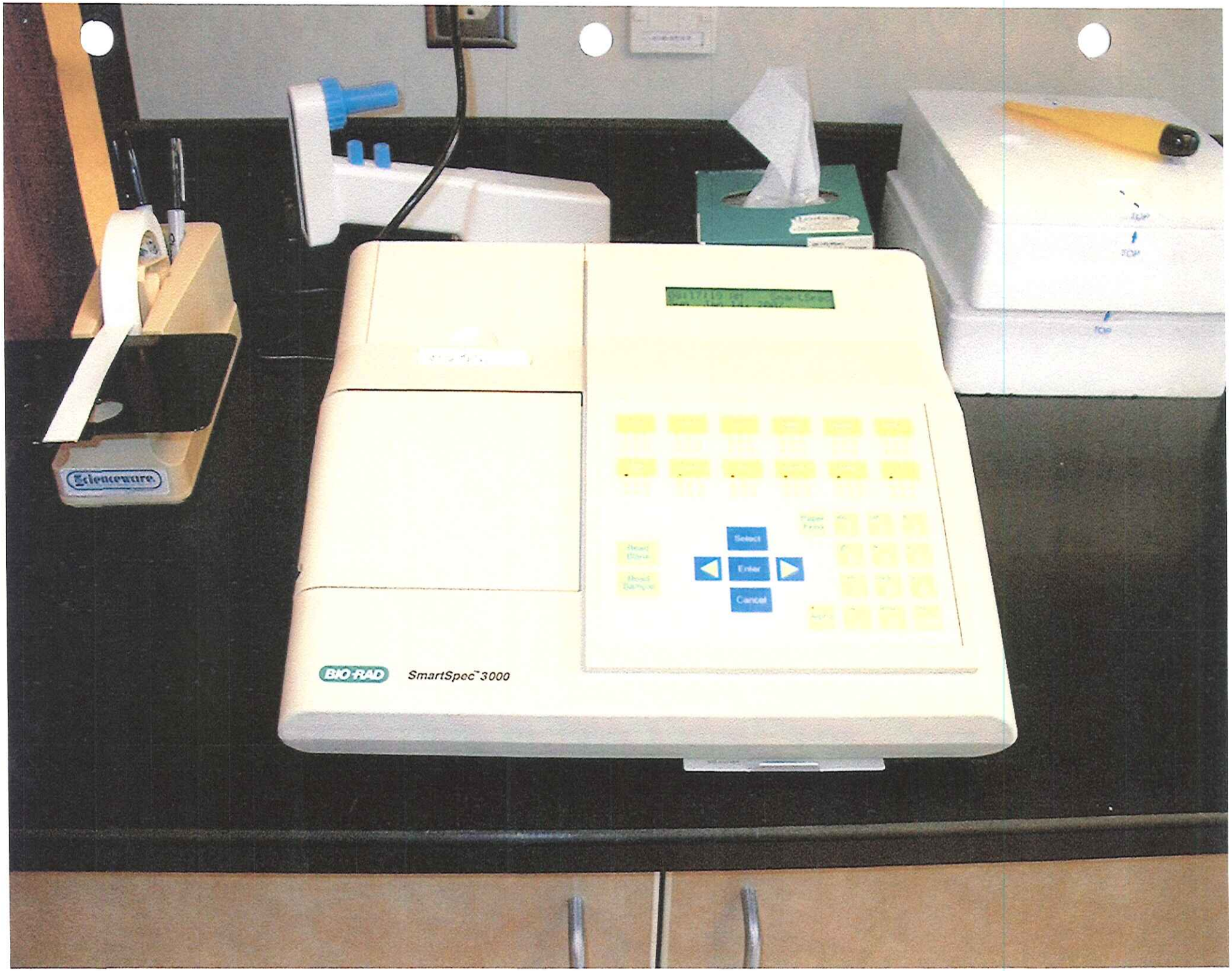
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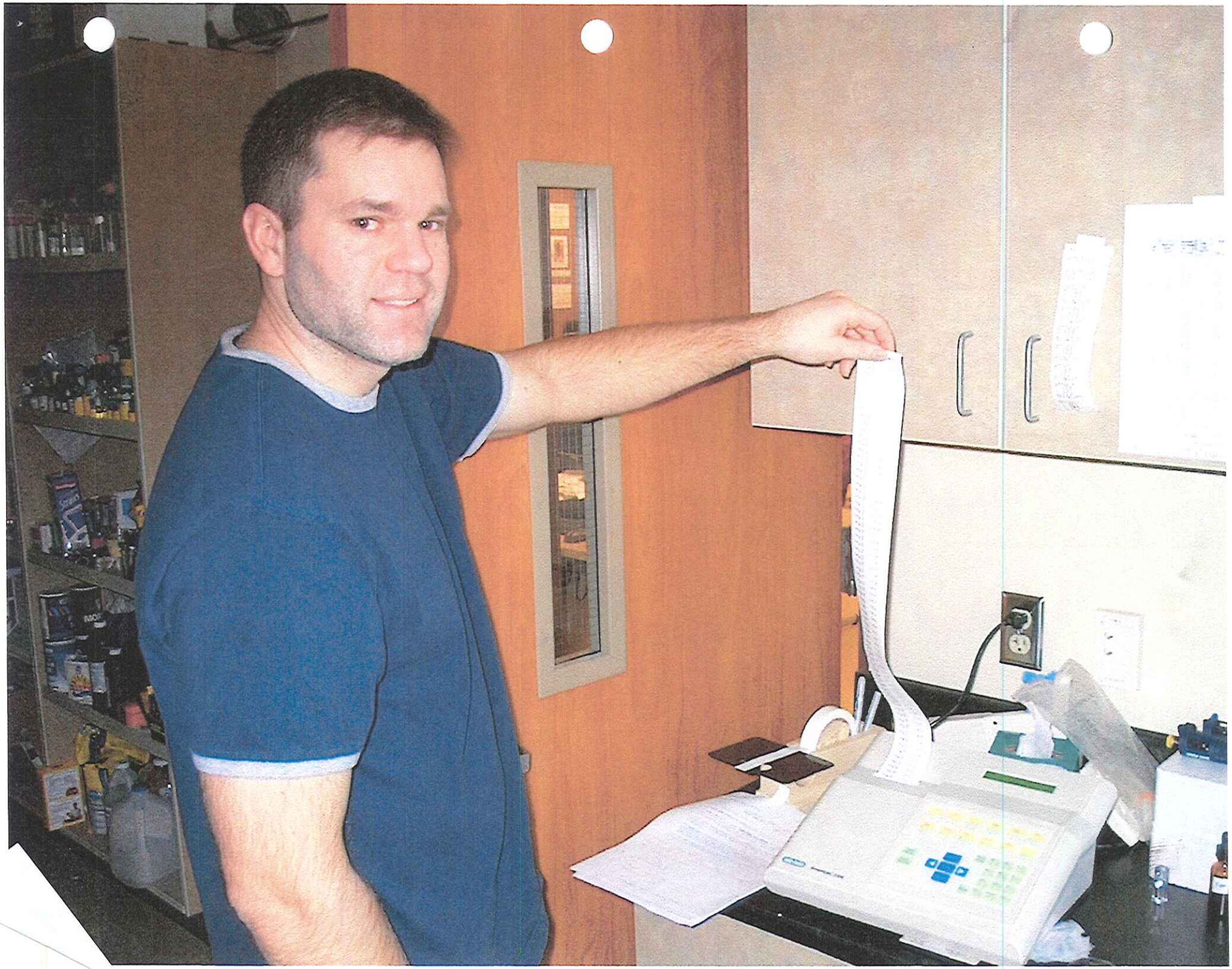

G-10

POLLUTION CONTROL HEARINGS BOARD
FOR THE STATE OF WASHINGTON

ARLT FAMILY LIMITED PARTNERSHIP, Appellant, v. STATE OF WASHINGTON DEPARTMENT OF ECOLOGY AND DEPARTMENT OF FISH AND WILDLIFE, Respondent.	)	PCHB No. 06-102 APPELLANT ARLT FAMILY LIMITED PARTNERSHIP'S REPLY BRIEF

I. INTRODUCTION / SUMMARY OF REPLY

This appeal challenges the Department of Ecology's refusal to invoke permit terms authorizing the revocation and/or termination of a NPDES Permit in light of new information and evidence of recent permit violations. The relevant permit is the 2002 NPDES Permit allowing the poisoning of lakes and streams throughout Washington State -- but primarily in Eastern Washington -- by the Department of Fish and Wildlife.[1]

[1] The poisoning of lakes with the intent to kill all aquatic life – called "rehabilitation" by Fish & Wildlife – is no longer tolerated in the Western half of the state. *See*, Declaration of Bob Gibbons

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As described in appellant Arlt Family Limited Partnership's initial appeal and supporting materials, the existence of a permit authorizing WDFW to

Fixed dropped sentence

In opposing appellant's opening brief, declarations, and voluminous supporting materials, the agencies challenge the Board's jurisdiction to grant the requested relief. However, the agencies fail to acknowledge that the issuance or reissuance of a NPDES Permit is categorically exempt from SEPA review. *See,* RCW 43.21C.0383, *and* Sammamish Plateau Water Dist., PCHB No. 05-145.

As discussed further below, the parties do not challenge the Board's jurisdiction over this appeal of Ecology's refusal to revoke or terminate Fish and Wildlife's "Fish Management Permit." As confirmed by the Board's authorizing statutes, its rules of practice, and its prior decisions, the Board has the authority to issue meaningful injunctive relief, including stays, temporary restraining orders, and preliminary injunctions. As a result, and because WDFW is a party to this appeal with full notice of the proceedings, the Board has the power to enjoin WDFW from poisoning Park Lake pending review of Ecology's decision.

Under the voluminous record presented to the Board, the Arlt Family satisfies the applicable standards for injunctive relief. This is so because the record establishes good cause to terminate WDFW's NPDES Permit No. WA0041009, thereby providing appellant a likelihood of success on the merits. The record contains abundant evidence showing that irreparable harm will result from the continuation of WDFW's NPDES Permit coverage – including harm to appellant's property, harm to the members of the Arlt Family Limited

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(WDFW), Attached "Revised Plan for the Use of Rotenone in Fish Management" (April 12, 2002) at Section 3, "Consideration of Rehabilitation of Western Washington Lakes."

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Partnership and others exposed to the poison rotenone. Most obviously, irreparable harm will occur to the fish and other aquatic life in the much-beloved Park Lake if and when WDFW discharges over 13,000 pounds of poisonous "cube root" into the lake.

The agencies have not met their burden of opposing injunctive relief by demonstrating a substantial probability of success on the merits, or an overriding public interest in poisoning Park Lake. To the contrary, WDFW's survey of anglers confirms that the majority of anglers prefer catching a type of fish other than rainbow trout, thus refuting any overriding public interest in catering to trout aficionados. Indeed, WDFW's survey also reveals that catching fish is not even among the two things Washingtonians enjoy most about fishing. WDFW's economic analysis likewise fails, because the agencies failed to produce any evidence that fishermen would stop using Park Lake – and spending money when they do – if they weren't sure to catch rainbow trout.

II. REPLY FACTS

Facts and exhibits supporting appellant's reply brief are included in the attached Declarations of Walter H. Arlt, John Arlt, Richard D. Arlt. To avoid repetition, the essential facts are set forth below, where relevant to appellant's arguments.

III. SCOPE AND STANDARD OF REVIEW

The Board reviews the issues raised *de novo*. WAC 371-08-485(1). "Under *de novo* review, the parties are allowed to present all relevant evidence at the hearing on the merits in order to enable the Board to make an informed and final decision." *Airport Communities Coalition v. Ecology*, PCHB No. 01-160, "Findings of Fact, Conclusions of Law, and Order"

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at 93 of 139 (§ V.A.) (August 12, 2002), *aff'd, Port of Seattle v. Pollution Control Hearings Bd.*, 151 Wn.2d 568, 90 P.3d 659 (2004).

IV. ARGUMENT

A. The Board Has the Authority to Grant the Requested Relief

Under applicable statutes, rules, and decisions, the Board has ample authority to issue stays, restraining orders, and injunctions, and thereby preserve appellant's ability to obtain meaningful relief.

First, the Board's authorizing statutes provide authority for issuing stays. RCW 43.21B.005(2) provides that in cases before the Board, the administrative appeals judge "shall possess the powers and duties conferred by the administrative procedure act, chapter 34.05 RCW . . . ." Likewise, RCW 43.21B.160 provides that the Board, and each member thereof, "shall have all powers granted to[] an agency by those provisions of chapter 34.05 RCW relating to adjudicative proceedings."[2] Those powers include the power to issue stays. RCW 34.05.467. Of course, RCW 43.21B.320 also authorizes the Board to issue stays.

Next, the Board's rules of procedure both directly and indirectly authorize the Board to issue stays and other injunctive relief. WAC 371-08-415 directly authorizes stays of the effectiveness of orders. WAC 371-08-300(2) indirectly authorizes stays and other injunctive relief by providing that Washington's civil rules "shall be followed in proceedings before the

[2] Adjudicative proceedings under the APA are governed by RCW 34.05.413 through 34.05.476. *See,* RCW 34.05 410; *see also,* RCW 34.05.479 (emergency adjudicative proceedings).

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board" except where "in conflict" with the Board's rules.[3] WAC 371-08-390(12) and (14) also support the Board's authority to grant injunctive relief.[4]

The Board's previous rulings recognize the Board's authority to issue injunctions and temporary restraining orders as necessary to preserve the Board's ability to provide meaningful relief to appellants.[5] Washington courts also recognize the importance of preserving the court's ability grant meaningful relief.[6]

Under these authorities, the Board has ample authority to grant effective and meaningful relief to the Arlt Family Limited Partnership.

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[3] Ecology "disputes" the Board's authority to issue injunctive relief under CR 65. *See,* Ecology Response at 5. Ecology argues that the issuance of temporary restraining orders under CR 65 conflicts with WAC 371-08-415(1) – and is therefore prohibited by WAC 371-08-300(2) – because "CR 65 allows a TRO to be granted with no notice to the opposing party[,]" while WAC 371-08-415 requires the parties to confer with the Board. Ecology Response at 6. However, CR 65 does not allow a preliminary injunction to issue without notice to the adverse party. *See,* CR 65(a)(1). Moreover, under the civil rules, TROs may be issued without notice only under the narrowly limited and carefully crafted requirements of CR 65(b). Thus, any appearance of a conflict between CR 65 and the Board's rules of practice is false, and at most relates only to TROs – not to preliminary injunctions.

[4] *See, e.g., Columbia River Alliance for Nurturing the Environment v. Dep't of Ecology,* PCHB No. 03-095 "Order on Motion to Stay the Legal Effect of Ecology's 401 Certification and Coastal Zone Consistency Concurrence" (August 26, 2003) (discussing the Board's earlier grant of a temporary restraining order).

[5] *See, e.g., Columbia River Alliance for Nurturing the Environment v. Dep't of Ecology,* PCHB No. 03-095 "Order Temporarily Restraining the Legal Effect of Ecology's 401 Certification and Coastal Zone Consistency Concurrence (Civil Rule 65)" (August 14, 2003); *and Ad Hoc Coalition for Willapa Bay v. Dep't of Ecology,* PCHB 01-095 (June 29, 2001) (cited in *Columbia River Alliance, id.*)

[6] The Washington Supreme Court has noted the importance of considering the parties' ability to secure the fruits of a successful appeal, stating, "Whether a stay pending appeal should be granted depends on (1) whether the issue presented by the appeal is debatable, and (2) whether a stay is necessary to preserve for the movant the fruits of a successful appeal, considering the equities of the situation." Purser v. Rahm, 104 Wn.2d 159, 177, 702 P.2d 1196 (1985), *citing Shamley v. Olympia,* 47 Wn.2d 124, 286 P.2d 702 (1955) *and Kennett v. Levine*, 49 Wn.2d 605, 304 P.2d 682 (1956).

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B. The Arlt Family's Appeal and Motion for Stay Are Not Moot

Neither agency challenges the Board's jurisdiction over the Arlt Family's appeal.[7] Nevertheless, by paraphrasing authorities concluding that particular "appeals" and "case[s]" should be dismissed for mootness,[8] as well as by urging the Board to "dismiss" (rather than "deny") appellant's motion,[9] the agencies overreach.

In essence, the agencies present the circular argument that because (1) the Board only has authority to "stay" the status quo (as narrowly defined[10] by the agencies to prevent this appeal from resulting in any meaningful relief to the Arlt Family); and because (2) an ineffectual stay of Ecology's decision would not result in immediate termination of WDFW's NPDES Permit or otherwise prevent the poisoning of Park Lake; therefore, (3) the Arlt Family can obtain no meaningful relief and the motion (if not the appeal) is moot. Ecology Response at 3-4.

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[7] *See,* Ecology Response at 2 ("Ecology does not challenge the Board's authority to review Ecology's October 18, 2006 decision not to terminate the permit[.]"); WDFW Response at 3-4. *Cf.,* Anderson v. Department of Ecology, PCHB Nos. 03-120, 03-123 ("Order Granting Motion to Dismiss for Mootness") (September 16, 2005); Weyerhaeuser v. Tacoma-Pierce County Health Department, PCHB Nos. 99-067, 99-069, 99-097, 99-102 ("Order on Motions to Dismiss") (September 23, 1999). Anderson involved the summary dismissal of appellants' claims where the underlying permit was withdrawn and there was "currently no active stormwater permit on appeal before the Board." Anderson, *supra*, Analysis at ¶5. Additional discussion of the Board's authority is plainly dicta. Weyerhaeuser involved solid waste discharge permits issued under RCW 70.95 – not a NPDES Permit issued under delegated federal authority – and thus is distinguishable. Under federal regulations, administrative appeal of EPA's denial of a request to modify, revoke and reissue, or terminate a permit is prerequisite to seeking judicial review. 40 C.F.R. § 124.5(b).

[8] *See,* Ecology Response at 3-4.

[9] *See,* Ecology Response at 3-4; WDFW Response at 3-4.

[10] The agencies implicitly omit from their concept of the status quo any acknowledgement that, as of the date of this appeal, Park Lake had not been poisoned with Rotenone for ten years. Ecology Response at 3; WDFW Response at 3-4.

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Certainly, the appeal itself is not moot: "an issue is not moot if a court can provide any effective relief[,]"[11] and the reversal of Ecology's decision not to revoke or terminate WDFW's permit would revoke or terminate WDFW's legal authority to poison Park Lake with Rotenone. Likewise, appellant's motion for injunctive relief is not moot, because the Board can issue injunctions and restraining orders under CR 65. The agencies' assertion of mootness fails because it depends on a false premise: the agencies' assertion that the Board lacks the authority to provide any meaningful relief. It is precisely because the Board can grant effective injunctive relief that appellant's motion is not moot.[12]

Under the facts of this appeal, the Arlt Family Limited Partnership also satisfies the "continuing and substantial public interest" exception to mootness, if any were deemed to exist. In determining whether sufficient public interest exists, the Board should consider: "'(1) the public or private nature of the question presented; (2) the desirability of an authoritative determination which will provide future guidance to public officers; and (3) the likelihood that the question will recur.'" Dioxin/Organochlorine Ctr. v. Pollution Control Hearings Bd., 131 Wn.2d 345, 351, 932 P.2d 158 (1997), *quoting In re Swanson*, 115 Wn.2d 21, 25, 804 P.2d 1 (1990) (other citation omitted).

Ecology argues appellant fails to satisfy the second and third element because WDFW's NPDES Permit will soon be expiring, and the proposed application of Rotenone to

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[11] City of Sequim v. Malkasian, 157 Wn.2d 251, 258-259, 138 P.3d 943 (2006) (citations omitted).

[12] The agencies also fail to acknowledge that WDFW is a party to this appeal and therefore is subject to the Board's authority.

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Park Lake will be WDFW's last application under the permit. Ecology's Response at 4-5. Yet the mere expiration of a permit is inconsequential: the Washington Supreme Court invoked the public interest exception in Dioxin/Organochlorine Ctr. even though the permits at issue had either expired or would soon expire, and the Legislature had amended SEPA to categorically exempt the reissuance of NPDES permits by statute. Dioxin/Organochlorine Ctr., 131 Wn.2d at 350. The Court found that the legal issue would likely recur notwithstanding the expiration of the specific permit at issue, and that its resolution of the issue would be of value to the public. *Id.* So too here – neither WDFW's "fish management" program nor Ecology's oversight of NPDES permits is likely to cease any time soon, and both are of considerable public interest.

C. Appellant Meets the Applicable Standards for Injunctive Relief

The Arlt Family Limited Partnership makes a prima facie case for a stay by demonstrating a likelihood of success on the merits of the appeal, as well as by showing irreparable harm. RCW 43.21B.320(3), WAC 371-08-415(4). Appellant qualifies for injunctive relief under CR 65 by showing (1) a clear legal or equitable right, (2) a well-grounded fear of immediate invasion of that right, and (3) the likelihood of actual and substantial injury. Kucera v. Department of Transp., 140 Wn.2d 200, 209 (2000).

a. Appellants Are Likely to Succeed On the Merits

Causes for modifying or terminating a permit during its term include, among others:

(i) Violation of any term or condition of the permit;
(ii) Obtaining a permit by misrepresentation or failure to disclose fully all relevant facts;
(iii) A change in any condition that requires either a temporary or permanent

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Jonathon Anderson (WDFW) ¶ 7) confirm that these formulations variously contain N-Methylpyrrolidone,[13] naphthalene, 1,2,4-trimethylbenzene, and acetone.[14]

Likewise, Mr. Anderson himself asserts that "Those data sheets indicate that none of the products WDFW may use at Park Lake has any known chronic/subchronic (cancer causing) effects, teratogenic (reproductive) effects, or mutagenic effects. Anderson Dec. at ¶ 10. To the contrary, the MSDS for "CFT Legumine" indicates the product is listed for its "Carcinogenic Potential." *See,* Anderson Dec. Exh. C at 4 of 5, Section 11. The product also includes the following:

> "California Proposition 65: Warning: This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm."

Id., Anderson Dec. Exh. C at 5 of 5. *See also*, Rebuttal Declaration of John Arlt at ¶ 4 (explaining the OSHA requirement in 29 C.F.R. § 1910.1200(d)(5)(ii) that mixtures not tested as a whole "shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture . . . .").

Appellant's declarations provide numerous other facts establishing adequate cause to revoke or terminate WDFW's NPDES Permit for "Fish Management."

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13 *Id.*, Exh. C at 1.

14 *Id.*, Exh. D at 1; Exh. E. at 1 (same).

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b. Threat of Irreparable Harm

The threat of irreparable harm resulting from the use of rotenone to poison surface waters is a matter of public record. *See,* Californians for Alternatives to Toxics v. Troyer, No. Civ. S-0501633, "Amended Memorandum and Order" (E.D. Ca. Sept. 1, 2005) (attached to Poulin Dec. as Exh. A). The Court stated:

> There is no dispute that poisoning the waters with rotenone, a highly toxic chemical lethal to acquatic organisms that obtain oxygen from water, will kill macroinvertebrates and certain species may never return to the impacted area. While the parties dispute the relative ability of macroinvertebrates to repopulate, the lethal consequences are certain.

Californians for Alternatives to Toxics, *id.* at 3-4. For these and other reasons, the Court held "plaintiffs have demonstrated a strong likelihood of irreparable harm if the court does not enjoin the project." *Id.*

The record in this appeal confirms that the 1996 application of rotenone exterminated the abundant frog population at Park Lake, and that the frogs have not returned since that time. *See,* Rebuttal Dec. of Richard D. Arlt at ¶ 8, pp. 5-6. Another episode of poisoning will inflict the same kind of irreparable harm on other, less obvious acquatic organisms and macroinvertebrates. As noted by Walter "Spike" Arlt, the proposed use of rotenone in Park Lake will also eliminate all of the trout in the lake, including rainbow and German brown trout, as well as numerous other species of fish. *See,* Declaration of Walter H. Arlt Supporting Reply Brief at ¶ 4.

The agencies provide no authority supporting their implicit assertion that the decimation of fish populations, aquatic life, and macroinvertebrates in somehow fails to qualify as "irreparable harm." The Board should join the United States District

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Court for the Eastern District of California in rejecting that assertion. Californians for Alternatives to Toxics, *id.* at 3-4.

C. The Agencies Have Demonstrated Neither Substantial Probability of Success on the Merits, Nor An Overriding Public Interest in Poisoning Park Lake

Under applicable law and regulations, the agencies may avoid a stay by demonstrating a substantial probability of success on the merits, or a mere likelihood coupled with an overriding public interest that justifies denying the stay. RCW 43.21B.320(3).

Ecology offers no additional argument or authority supporting its probability of success, and relies on WDFW's assertion of public interest. *See,* Ecology Response at 14-15.[15] However, Ecology offers a spurious pitch for public interest served by "finality in permitting decisions." *Id.* at 15. To the contrary, the public interest would be far better served by a permitting process that provides useful information -- such as identifying which public lakes and streams will be poisoned, and when the proposed fish kills will take place – at the time the permit is issued. Here, the information provided to the public when the draft NPDES permit was issued in 2001 was so generic that despite the permit's five-year term and the permit's authorization of lakes and stream poisoning state-wide, *not a single member of the public commented on the draft NPDES Permit*. *See,* Declaration of Kelly McLain at ¶ 9, attached to Ecology's Response. According to Ms. McLain, the "only comments received" during the comment period for the 2002 NPDES Permit "were from four Ecology employees[.]" *Id.*

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[15] Without citation to authority, Ecology asserts "broad authority to determine whether to revoke or terminate a permit[]" and "broad discretion to consider whether permit termination is an

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As noted above, WDFW's assertion of an "overriding public interest" in poisoning Park Lake is equally dubious. There simply is no overriding public interest in making sure that a relative handful of trout fishing enthusiasts can be sure to catch four (4) trout on Opening Day.

V. CONCLUSION

Under the foregoing points and authorities, appellant Arlt Family Limited Trust Partnership satisfies the legal standards for injunctive relief needed to preserve the Board's ability to grant meaningful relief upon review of the merits. Accordingly, appellant respectfully requests that the Board grant appropriate relief to prevent the poisoning of Park Lake during the pendency of this appeal.

DATED this 6th day of November, 2006.

SMITH & LOWNEY, P.L.L.C.

By: _____
Richard A. Poulin, Of Counsel
WSBA # 27782
Attorneys for Appellants
Arlt Family Limited Partnership

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appropriate response to a permit violation." Ecology's Response at 6-7, 12. Ecology does not explain how the asserted discretion squares with this Board's de novo review authority.

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Inert Ingredients in Pesticides: Who's Keeping Secrets

G-11

by Caroline Cox

JOURNAL OF PESTICIDE REFORM/ FALL 1999 · VOL.19, NO. 3

Read this before ever using.

SUMMARY

Inert ingredients are among pesticides' strongly held secrets. They are chemicals used in pesticide products to make the pesticide more potent or easier to use. For years, pesticide manufacturers have claimed that they were trade secrets and it was almost impossible for pesticide users or concerned activists to find out about them. Despite their misleading name, inerts are neither chemically, biologically, or toxicologically inert. Although they are only minimally tested, many of them are known to state, federal, and international agencies to be hazardous.

A 1996 court decision opened the possibility of getting some information about inert ingredients via the federal Freedom of Information Act. While manufacturers are still able to withhold this information if they can justify their claim to the U.S. Environmental Protection Agency (EPA), most of the companies EPA has contacted so far have been willing to identify inerts. Only 8 manufacturers, out of 38, have withheld information about inerts.

NCAP, with the help of over 250 supporting organizations and attorneys general in 7 states, has petitioned EPA to require that all pesticide ingredients be identified on product labels. All of us are exposed to pesticides on a daily basis; at the very least, we have the right to know the identity of the chemicals to which we're being exposed. EPA needs to act soon on NCAP's petition and implement our right to know.

Imagine, with tongue in cheek, that pesticide companies were forthcoming. "Why yes," their representatives would say as they showed their newest products. "These are toxic, designed to kill, but they shouldn't cause any unreasonable problems. And yes, we use them on your food, in your house, in your schools and parks, and lots more places, but we do need to protect the investment we've made in developing these products. So most of what's in them is going to be kept a secret, unless you really make an effort and we have to tell you."

Absurd as this little story sounds, it's not far from the truth. Cookies, shampoo, cat food, contact lens solutions, body lotion, and over-the-counter painkillers, to name a few, all provide a lot more information about what's in them than do pesticides. Most pesticide ingredients are misleadingly identified only by the words "inert" or "other." (For a definition, see "What is an 'Inert' Ingredient?" below.) These ingredients often make up the bulk of a pesticide product.

The absurd story inspires a string of questions. Why do we need information about inerts? Why are so many pesticide ingredients unidentified? How can we identify inerts? Will manufacturers provide any of this information? Which companies are forthcoming? Which ones are not? Answers to these questions follow.

What is an "Inert" Ingredient?

Inert, when applied to pesticide ingredients, does not mean biologically, chemically, or toxicologically inert. Under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), the U.S. pesticide law, inert ingredients are defined simply by excluding active substances.

Active ingredient: An ingredient that will prevent, destroy, repel, or mitigate any pest. (Under FIFRA, four other

categories of biologically active chemicals are included in the definition of an active ingredient: plant growth regulators, defoliants, desiccants, and nitrogen stabilizers.)(1)

Inert ingredient: Any pesticide ingredients other than an active ingredient. They are used as solvents, surfactants, diluents, carriers, catalysts, synergists, intensifiers, and more than 30 other uses.(2) Recent EPA policy allows the term "other" to be substituted for the term "inert" on pesticide labels.(3)

According to EPA policy, inerts are intentionally added substances, not contaminants. They do not include adjuvants, chemicals added by the pesticide user during application.(4)

The mixture of active and inert ingredients in a commercial pesticide product is called the full formulation.

1. Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Sec. 2(a). Available at www.epa.gov/pesticides/fifra.htm.

2. FIFRA. Sec. 2(m)

3. U.S. EPA. Office of Pesticide Programs. 1997. Pesticide regulation (PR) notice 97-6. www.epa.gov/opprd/inerts/pr97-6.html.

4. U.S. EPA. 1987. Inert ingredients in pesticide products; Policy statement. Fed. Reg. 52(77): 13305-13309, Apr. 22. Also available at www.epa.gov/opprd001/inerts/fr52.htm.

A. Mosher

Like all pesticides, lawn care sprays have many unidentified 'inert" ingredients.

Inerts Are Important!

NCAP has been working for a decade to learn the identities of the inert ingredients in pesticide products. It's important to remember just why we need this information and why we're fighting to get it.

NCAP's answer to these questions is four-pronged. First, the ethical questions in any discussion of inert ingredients are powerful. We're exposed to pesticides every day, and most of these exposures are ones over which we have no control. We are entitled, at the very least, to complete identification of all of the ingredients to which we're being exposed.

Second, inerts are inadequately tested. In order to be registered for use in the U.S., pesticides undergo a series of tests that assess their toxicity and environmental fate. Most of the testing, however, ignores inert ingredients; this includes tests of the pesticide's ability to cause cancer, genetic damage, and birth defects. The full formulation is tested mainly for short-term effects: eye irritation, skin irritation, and tests to determine lethal doses.(1) Some toxicology testing is separately required of chemicals used as inerts, but even EPA calls these requirements "minimal."2

Third, many inerts are hazardous. Despite their limited testing, of the almost 2300 chemicals3 that EPA believes are currently used as inert ingredients, over 600 (26 percent) have already been classified as hazardous by state, federal, and international agencies.(4) This includes chemicals listed under the Clean Air Act, the Clean Water Act, the Safe Drinking Water Act, and others. Examples of hazardous and commonly used inerts include crystalline silica (causes cancer and genetic damage),5 naphthalene (causes anemia and liver damage),6 xylenes (cause headaches, confusion, and fetal death),7 and erioglaucine (FD&C Blue Dye No. 1; causes malignant tumors in laboratory tests).(8),(9) How many inerts would have identified hazards if they were comprehensively tested? It is impossible to know.

Finally, inerts put people's health at risk. A recent incident in New York powerfully illustrates how complex inerts' health impacts can be. In April of 1996, and again in August, Terminex International Co. treated the home

of the Trimper family in Rotterdam for termites with an insecticide, probably Dursban TC.(10) Dursban TC is a commonly used termiticide containing chlorpyrifos.(11) The Trimpers had asked for another chlorpyrifos insecticide, Equity,10 but Terminex applied Dursban instead.(12)

Following the second treatment, three-year-old Kyle Trimper became ill with unexplained high fevers and respiratory problems. His parents were also ill, and his mother suffered two miscarriages during the following year.(10)

In early 1997, the family complained to the New York Department of Environmental Conservation about the lingering odors in their home, and the health problems Kyle was having. The agency came to their house, along with the Department of Health, and collected air samples several times.(10) Because Terminex asserted that the insecticide applied in the Trimper home was Equity, even though the applicator who had done the treatment admitted otherwise, the agencies looked at inert ingredients in the air of the Trimper's home.(12) (This analysis for inerts as part of an enforcement investigation is extremely rare.) Equity's inert ingredients are identified by Dow AgroSciences, its manufacturer, as "proprietary emulsifiers, proprietary solvents, and propylene glycol."13 Dursban TC's inerts, according to Dow, are also proprietary, but include "xylene range aromatic solvent."(14)

The air samples were, in a word, frightening. The agencies found a mixture of solvents, including benzene, toluene, ethylbenzene, xylenes, and trimethyl benzenes. The Department of Health analyzed the components of a sample of Dursban TC, and then compared it with what they found in the Trimper's house. The result was "a very close match."(10)

The benzene in the Trimper's house was particularly frightening. Benzene is "carcinogenic to humans,"15 according to the International Agency for Research on Cancer because people who are exposed to it are at increased risk for leukemia. In laboratory studies it has caused tumors in multiple organs and also causes genetic damage.(15) EPA classified benzene as "of toxicological concern" in 1987 and asked pesticide manufacturers to stop using it.(2) By 1991 EPA had removed benzene from its list of pesticide inert ingredients16 because the agency believed that it was no longer being used. So why was it in the Trimper's house? Because Dursban TC contains "a mix of petroleum distillates" according to EPA's Kerry Liefer.(10) And that mix contained benzene.

The other Dursban inerts found in the Trimper's home are also hazardous. Toluene causes confusion, memory loss, nausea, and can harm unborn babies when their mothers are exposed.(17) Trimethylbenzenes damage the nervous system and are irritating to eyes.(18) Xylenes cause headaches, nausea, confusion, kidney damage, and fetal death.(7)

The Trimper case is unlikely to be just an isolated incident since Dursban TC is one of the most widely used liquid termiticides in the U.S.(10) However, when termite treatments cause problems, attention almost always focuses on the active ingredient. It is rare that there's any consideration of inerts. As a result, it is impossible to know how often incidents like the Trimper's occur.

The Trimper story shows that the inerts issue is basically simple. It sets our health and our right to know up against the profits and competitive advantages of a relatively small but powerful group, pesticide manufacturers. Pesticide regulation has traditionally deferred to manufacturers, but our activism can bring the balance back toward the public interest.

Why Are So Many Inerts Unidentified?

Fundamentally, the reasons for inert ingredient secrecy can be summed up in one word: expediency. Regulating pesticides on the basis of their active ingredients means that EPA can focus its limited resources on roughly 900 active ingredients instead of over 20,000 pesticide products.(19) Alternate formulations may boost this number to 60,000.(20) Pesticide manufacturers have the freedom to adjust ingredients based on market conditions, availability, and other factors without close regulatory oversight. "Pes ticide manufacturers play the market on inert ingredients," said EPA insecticide product manager Phil Hutton. "The inerts vary and if it's xylene, or petroleum distillates, or whatever, as long as their chemists or toxicologists think it's safe, they use it."(21)

While pesticide manufacturers often claim that inert secrecy allows them to maintain a competitive advantage over their rivals, this argument is weak. State-of-the-art laboratory equipment gives most manufacturers the ability to accurately identify the ingredients in their competitors' products.(22)

Getting Information About Inerts

There is currently no easy, or completely successful, way that either pesticide users or people concerned about pesticide use can get information about inerts. A combination of the following approaches is the best tactic to take:

Medical emergencies: Physicians, other medical professionals, and public health agencies who are assisting patients who have been poisoned by a pesticide need immediate access to information about inert ingredients. Such access is allowed by EPA regulations when "disclosure is necessary in order to treat illness or injury or to prevent imminent harm"23 EPA relies on manufacturers to provide this information. However, there is no formal requirement that they identify inert ingredients.(24)

Material safety data sheets: Also known by their acronym, MSDS, these are documents produced by pesticide manufacturers under the mandate of the Occupational Safety and Health Act.(25) They provide information about the hazards of chemicals, and sometimes identify some of the inert ingredients in a pesticide product. MSDSs are available by calling the manufacturer of a specific product, by asking a pesticide retailer, or by visiting a manufacturer's web site. In general, MSDSs identify those inert ingredients that have been classified as hazardous by the Occupational Safety and Health Administration,(26) but not all companies interpret the requirements of the law in the same way. If inert ingredients are identified on an MSDS, it is usually only a partial list.

Freedom of Information Act requests: Federal law (called the Freedom of Information Act, FOIA) guarantees public ac cess to EPA's pesticide documents except for specific classes of documents that are exempt from the law.(27) Since pesticide manufacturers submit forms that identify inerts to EPA, these documents, at least theoretically, are available through FOIA. For many years, pesticide manufacturers routinely claimed that these documents were exempt from FOIA because that law protects trade secrets and confidential business information from disclosure.

As a result of a lawsuit filed by NCAP in collaboration with the National Coalition Against the Misuse of Pesticides, a federal court ruled in 1996 that inert ingredients do not meet the statutory definition of a trade secret, and can only be protected as confidential on a case-by-case basis. The court also ruled that inerts did not have special protection under FIFRA, the national pesticide law.(28) This has opened up an avenue by which inert ingredient information is potentially available to the public. In the three years since the favorable decision in NCAP's lawsuit, NCAP, other organizations, and people acting on their own behalf have filed FOIA requests for the identity of inerts in literally thousands of products. EPA has now responded to several hundred of these requests.(29)

There are three major drawbacks to the FOIA process. First, it is only available to people who are familiar with the law and know how to make an official request. Second, it is slow; most of NCAP's requests have required months or years to complete. Third, under the process outlined by the decision in NCAP's lawsuits, pesticide manufacturers can claim that the inerts in a particular product are confidential if they justify such a claim to EPA.(29) Some manufacturers continue to withhold the identity of some or all of the inerts in their products. We have a long road to travel before full disclosure of inert ingredients is a reality.

Which Manufacturers Withhold Information About Inerts?

Does Anyone Really Know ?

Can anyone accurately identify all of the ingredients in a pesticide? Chances are that the answer to this question is no.

We assume pesticide manufacturers know what's in their products, but this is an oversimplification. The Trimper story shows that pesticide manufacturers can identify inert ingredients as mixtures that leave hazardous ingredients unidentified.(1)

We also assume that EPA knows the ingredients in pesticide formulations. This also is not true. Although manufacturers provide EPA with lists of the ingredients in each of their products, EPA's Office of the Inspector General found that EPA's pesticide database contained hundreds of chemicals that were identified only as "chemical name not available." A random sample of database entries found that almost half contained errors in the identification and coding of inerts.(2) For example, NCAP asked EPA for a list of products that contained the inert ingredient naphthalene. EPA located three products containing naphthalene and reported that there were coding errors that made a complete list impossible.(3) A quick scan through an MSDS compilation(4) located 22 products, and there are likely hundreds more.

At this time, accurate laboratory analysis is probably the only way to know with certainty what the ingredients in a pesticide are.

1. Darcey Publications. 1999. Dursban TC inerts benzene, trimethylbenzene, suspects in boy's illness following termiticide mishap. Pesticide Report 3(1):1-8, June 12.

2. U.S. EPA. Office of the Inspector General. 1991. Report of audit. Inert ingredients in pesticides. Washington D.C., Sept. 27.

3. Personal communication between Holly Knight, NCAP, and Calvin Furlow, EPA Public Information and Records Integrity Branch. Spring 1997.

4. MSDS reference for crop protection chemicals. Fourth edition. 1992. New York; Chemical and Pharmaceutical Press.

What Next?

Getting information about inerts in pesticides is currently a frustrating, time- consuming, and unacceptable process. Not even medical professionals have easy access to complete information. Material safety data sheets are a relatively easily accessible source of information, but they don't identify all inerts; many MSDSs identify none. The Freedom of Information Act process is cumbersome, time-consuming, and does not always provide the information we are seeking. Clearly, we need a better way.

In January 1998, NCAP and 180 supporting organizations submitted a rule-making petition to EPA asking the agency to require that all pesticide ingredients be identified on product labels. A parallel petition was submitted by the attorneys-general from New York, Alaska, Connecticut, Guam, Massachusetts, Minnesota, New Hampshire, and Wisconsin. Eighty additional organizations signed on to the petition in 1999.

This regulatory change would make inert ingredient information easily available to pesticide users and the general public. Since most pesticide manufacturers, based on NCAP's experience, will identify inerts, there should be no major obstacle blocking EPA's action. However, EPA has not yet decided how to respond to the petition.

Conclusion

Information is one of the cornerstones of a democracy; without accurate facts it is impossible for citizens to make responsible decisions. The popular support for all kinds of right-to-know programs demonstrates just how important information is to our society. Inert ingredients in pesticides should be no exception.

Although existing methods for getting information about inerts are awkward and time-consuming, a majority of the pesticide manufacturers approached through the Freedom of Information Act have been willing to stop withholding information about inerts. EPA needs to require that the other manufacturers join with their competitors and provide this information. It's time to end inert secrecy and identify all pesticide ingredients on

product labels.

Pesticide labels should identify all ingredients.

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