

Big Sky Clearwater

Volume XXXIII, Issue 2 — Fall 2003

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Jim Melstad Retires

On May 27th, 2003 Jim Melstad announced that he was retiring as the Section Supervisor of the Public Water Supply Section and his last day would be June 13th. Jim was with the State of Montana for almost 27 years and will be missed by all of us in the state, government sector, and the friends he made throughout the United States.



Jim came to Montana as a young engineer from South Dakota and began working in the Subdivision Section reviewing plans. He moved to the Public Water Supply Section later and still reviewed engineering plans along with sanitary surveys and providing technical assistance. As time went by, Jim became the Program Manager for Engineering Services. We still see the work today that Jim provided to other engineers in their plan review submittals. Jim was outstanding!

Later, Jim became the section manager for both the Subdivision and Public Water Supply Sections. This is where our redheaded engineer from South Dakota began to feel the pressures of government work (engineers and operators). The red hair quickly turned

to white but Jim still remained the witty engineer that he is.

Jim took a small drinking water program from the 80's and early 90's and made it into a leading national program. Jim left with a full staff of 28 dedicated individuals and with 4 additional staff members to be added in fiscal year 04. His day started at 6:30 and ended sometime in the evening.

Jim is remaining in the water business and has taken a position with the Cadmus Group and will be conducting training, sanitary surveys, and EPA assignments. So, you may still run into Jim from time to time in a water plant in Montana.

Thanks Jim!

Big Sky Clearwater

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The *Big Sky Clearwater*,

a publication of the Montana Department of Environmental Quality, is for water and wastewater operators and managers. The Department welcomes articles of interest and suggestions for articles related to water quality, water and wastewater treatment and the water environment. Articles may be about your treatment plant experiences, or those of others, technical papers or any information that may benefit other operators or managers.

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Reflections in the Ripples

By Bill Bahr, DEQ

Summertime in Montana brings a host of new challenges and opportunities for those of us involved in providing safe drinking water and cleaning up wastewater so it is safe to become part of the natural water cycle again. Along with the fires that are challenging our resources and the relentless heat this summer has brought, we are still faced with recovering from the effects of a long-lasting drought. Wells are drawn down and don't produce the same quantity of water, rivers are low and, in some areas, dry, recreation is limited in some areas and people evacuated from others, to name a few of the effects of the current environmental climate in Montana. While none of us has all the solutions to these problems, the answers we do come up with reveal the tenacity of human nature.

A major change at DEQ has been the retirement of **Jim Melstad** from public service. Jim is continuing his work in the private sector and many of you will likely be working with Jim in his new position with the Cadmus Group. The Public Water Supply program at DEQ is adjusting to losing the vast knowledge and work ethic Jim brought to the program, but they are getting the work done.

Ryan Leland has left the department as well and is now the City Engineer for Helena. Ryan is a hard working individual and should serve the city well. We will miss Ryan's energy, especially considering the large number of plans and specifications that that office must review before system construction, improvements and alterations can be undertaken.

The 13th Annual Advanced Wastewater Training seminar at Yellow Bay will feature our good friend, **Paul Klopping** from Corvallis, Oregon. Paul is recognized nationwide as one of the top wastewater specialists. He hails from a microbiological background and has worked with many systems around the nation and world to bring a better understanding of the processes involved in wastewater treatment. While his carpentry skills may leave something to be desired, there's no question that this year's program will be outstanding.

The **70th Annual Fall Water School in Bozeman** offers a wide variety of topics in water and wastewater treatment. The school organizers are placing an emphasis on the connection between environmental impacts and public health, and on security considerations at our public

systems. We hope, through a discussion of Homeland Security requirements and case studies, we can help communities cope with natural disasters and the unfathomable menace of terrorism. (See the list of Fall School topics pages 44-45.)

We celebrate Earth Day in April every year, but it is good to remember that we need to do our part to protect our natural environment every day. The following is a summary of a list of **10 Environmental Hazards You Can Live Without**, provided by the American College of Occupational and Environmental Medicine.

1. **Tobacco Smoke** – No Smoking at Home. Long-term exposure to tobacco smoke from smoking or from other people smoking will increase your health risks.
2. **Radon** – Test Your House. Radon is an odorless invisible gas that increases risks of lung cancer.
3. **Asbestos** – Leave It Alone. Do not try to remove asbestos yourself. Many older homes and buildings have asbestos-containing products in them. Identify asbestos in your home and avoid disturbing it. Hire specialists to remove the asbestos. Call 1-800-638-CPSC for help.
4. **Lead** – Identify and Avoid It. Prior to 1978, many paint products contained lead. Nearly 900,000 children suffer lead poisoning each year. Young children at risk for lead exposure should be tested. Older homes should be evaluated for lead content in the paint and the soil around the house where paint scraping has taken place should be tested. Most homes must be tested for lead before they can be sold or rented. Hire professionals to test for and remove lead; improper technique can make the problem worse. Call 800-424-LEAD for help.
5. **Combustion Gases** – Exhaust Them. Home heating systems often produce carbon monoxide, nitrogen oxides and sulfur dioxide gases. They can cause flu-like symptoms, respiratory illnesses or death. Do not use unvented combustion appliances indoors, especially portable kerosene heaters. Use the exhaust hood over a gas stove

and use gas stoves that do not require always-on pilot lights. Clean and maintain your chimneys and furnaces, maintain all vents from combustion appliances, and install a carbon monoxide monitor.

6. **Water Pollution** – Know What You are Drinking. While the United States is blessed with some of the safest drinking water in the world, problems have occurred. Contact your public water system manager for the system’s annual report. Call 800-426-4791, the EPA Drinking Water Hotline for information or your local public works department. Private wells should be tested annually for nitrate and bacteria, and, depending upon location, for pesticides, radon and other chemicals. Older plumbing may contain lead; let water run until it is as cold as it will get before drinking or using for cooking. Home water filters can help, but must be maintained.
7. **Household Chemicals** – Select, Use, Store and Discard Wisely. Choose the least dangerous products available. Keep away from children and pets and store outside of home, if possible. Follow labels. Store properly in labeled containers. Dispose of properly; often there are household hazardous waste days for this purpose. For a poisoning emergency, call the Poison Control Center at 800-222-1222, or 911 if person has collapsed or is not breathing.
8. **Pesticides** – Use Properly To Reduce Risks. Utilize natural methods for maintaining lawns, gardens and trees to reduce pest problems and reliance on chemical pesticides. Store firewood away from house to avoid wood-destroying insects. Keep food in tight containers and clean up food residue to minimize household pests. Use personal protective equipment and lock up pesticides. Label pesticide containers. Call the National Pesticide Information Center at 800-858-7378 about the safe use of pesticides.
9. **Allergens** – Avoid and Control. Water-damaged materials can grow molds and other organisms that can cause allergies and other illnesses. Fix leaks and moisture problems. Humidifiers must be maintained properly. Keep furry animals out of the house, especially the bedroom. Brush them outside. Wrap pillows and mattresses in allergy-proof covers.

10. **Food Poisoning** – Prepare and Store Food Correctly. Keep refrigerator below 40 degrees Fahrenheit. Promptly refrigerate cooked perishable food. Wash cutting boards with soap and hot water after each use. Keep raw meat, poultry and fish from touching foods that will not be well-cooked. Do not eat raw or undercooked eggs.

Can Biosolids Reduce Lead in Soils?

An interesting side note to the concern about lead in our environment is the following discussion of a study that shows Biosolids produced at wastewater treatment plants hold a promise of remediating lead-contaminated soil. So, while biosolids used for agriculture may be controversial, new research indicates biosolids may be able to serve another useful purpose by reducing the bioavailability of lead in inner-city soil.

According to the Centers for Disease Control and Prevention, nearly 1 million children living in the United States have lead levels in their blood high enough to cause irreversible damage to their health. In many cases, auto exhaust from leaded gasoline and lead paint from older buildings have contaminated soil to levels exceeding the EPA threshold value of 400 parts per million. Children are exposed to the lead when they play outside, get dust on their hands and track soil into their homes.

The study by University of Washington researchers using funds from the Water Environment Federation, looked at reducing the bioavailability of lead from contaminated soil from a home garden in Baltimore with eight different municipal biosolids products, including composted biosolids. The results were published in the January/February issue of the *Journal of Environmental Quality*.

The study added these biosolids products to the lead-contaminated soil and then used both lab tests and an animal feeding study to evaluate changes in lead levels. The composted biosolids, in general, proved the most beneficial. Plain compost resulted in a 23 percent reduction of lead bioavailability, while compost with high concentrations of iron and manganese reduced lead by 38 percent.

Sally Brown, University of Washington, co-author of the study, explains that both iron and manganese oxides and minerals in the biosolids seem to be very effective at forming complexes with metals such as lead and cadmium. In addition, the organic matter in the compost also

forms complexes with metals. In this way, the lead is “absorbed” so that a child who ingested the soil would not be able to absorb it into his or her body — or in other words, the “bioavailability” of the lead is reduced.

As a result of this initial study, a pilot program has begun adding composts to home gardens in Baltimore. Compost in combination with phosphorus was also used to treat a site in East St. Louis. Initial results from these programs confirm the results of the lab study.

“Using compost generated by cities to help remediate soils in the cities is a beneficial solution all around,” said Brown.

Green Website

A new website, <http://www.greenadviser.org>, selects the best advice from various entities that have an environmental focus in order to help people save money while living a lifestyle that reduces overall impacts to our natural environment. Green Adviser features links to articles, interactive tools and databases that help consumers make smarter, healthier choices.

Troubleshooting 101

Using a step-by-step approach to finding solutions can save a good deal of stress. Most employers expect their employees to solve problems that arise in their jobs. The causes of problems are sometimes difficult to ascertain. Here are some suggestions for getting to the bottom of a troublesome situation:

1) State the problem in specific terms. Saying the plant is all screwed up is far less precise than stating that the pumps aren’t pumping or the plant discharge is failing to meet permit limits.

2) State what should be occurring in specific terms. Saying my car doesn’t work is less helpful than describing the flames shooting from under the engine hood and mimicking the loud banging sounds it made just as it died.

3) State specific differences between what is occurring now and what should be occurring. That is problem definition. The drinking water should be clear with no sediment, while this stuff looks like it came from the horse tank, would be a good start.

4) Brainstorm all the possible causes of the discrepancy. At this point, all reasonable explanations should be considered, along with any less obvious reasons. Some-

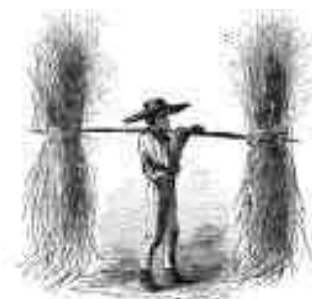
times the actual problem and solution will come as a surprise.

5) Design and apply test solutions and then evaluate the results. Be ready to reevaluate; there could be another surprise right around the corner.

Controlling Pond Algae with Barley Straw

(Important note: In the past year USEPA has taken enforcement action against some companies that sell Barley Straw. EPA has made the determination that since these products are making claims to reduce algae, it is considered a pesticide, and therefore must be registered. The efficacy of these products has not been proven.)

Algae are microscopic, free-floating plants which comprise a critical component of a lake’s food web. They are fed upon by tiny animals called zooplankton which are an important food source for fish. Algae color the water green or brown, and uncontrolled growth can lead to nuisance surface scums, poor water clarity, noxious odors and an overall reduction in the lake’s recreational value. Excessive levels or “blooms” of algae occur when nutrients, especially phosphorus, are abundant. After taking steps to reduce the amount of phosphorus entering a lake, it may be desirable to control the algae growth directly. Typically this is accomplished by treating the lake with copper-containing compounds such as Cutrine Plusr or copper sulfate. These treatments are effective short-term controls of algae, but they are also toxic to nontarget organisms that are important food sources for fish such as zooplankton and insect larvae. Re-application of these chemicals is usually necessary several times each year and the long-term buildup of copper in the lake sediments is an environmental and health concern.



The Centre for Aquatic Plant Management (CAPM) in the United Kingdom is promoting a method of controlling algae that involves the application of barley straw to lakes. As the straw decomposes in the lake, it releases a chemical that inhibits algal growth. This method may be a good alternative to using copper-containing compounds since it is not known to have toxic effects on rooted aquatic plants, zooplankton, insect larvae or fish. It appears to be a cost-

effective and environmentally acceptable way to control algae in ponds and lakes.

When to Apply the Straw

The decomposition process is temperature dependent and occurs faster in warmer water. When the water temperature is below 50°F, it takes approximately six to eight weeks for the decomposing straw to produce enough of the growth inhibiting chemical to effectively control algae. However, it only takes one to two weeks when the water temperature is above 68°F. Once the straw begins to produce sufficient amounts of the chemical, it is likely to control algae for four to six months. Therefore, straw should be applied in mid-late April in order to control summer algal growth in Nebraska ponds and lakes. (Montana lagoons may want to apply later.)

Amount of Straw to Apply

The amount of straw required to control algal growth depends on the surface area of the lake.

Lakes with a history of algae problems should be treated at a rate of 225 pounds of barley straw per surface acre. This rate is equivalent to about 0.8 ounces of straw per 10 square feet of surface area. Lower doses can be tried, but should not fall below 90 pounds of straw per acre or 0.3 ounces per 10 square feet.



The effectiveness of the straw is reduced by sediments suspended in the water (i.e. “muddy” water). Therefore, a higher dose may be required in “muddy” lakes or lakes with extremely severe algae problems. In these types of lakes, apply 450 pounds per acre (1.7 oz per 10 square feet), but do not exceed 900 pounds per acre (3.3 oz per 10 square feet). The decomposition of the straw requires oxygen, and applying excessive amounts (greater than 900 lbs per acre) of straw could reduce the oxygen content of the water to levels that stress or kill fish.

Example: Determining the amount of straw required to treat a 5-acre pond.

1. The surface area of the pond is 5 acres.
2. The selected dose is 225 pounds of straw per acre.
3. Multiply the area of the pond (in acres) by the amount of straw required per acre to calculate the total amount of straw required to treat the whole pond (5 acres x 225 lbs/acre = 1125 lbs).

4. To calculate the number of bales needed to treat the pond, divide the total amount of straw required to treat the whole pond by the weight of a single bale of barley straw. For this example, assume one bale weighs 45 pounds. However, the size and weight of bales can be highly variable. It is recommended that the approximate weight of the bales be determined at the time of purchase (1125 lbs, 45 lbs/bale = 25 bales).

How to Apply the Straw

1. The straw bales must first be broken apart. Bales are packed too tightly and do not allow adequate water movement through the straw.
2. The loose straw should be placed in some form of netting. In larger lakes and ponds, CAPM suggests wrapping the straw in the cylindrical netting commonly used for wrapping Christmas trees. This netting can be used to construct straw-filled tubes up to 65 feet long which contain about 110 pounds of straw. Loose woven sacks (e.g., onion sacks) can be used in small ponds that require low doses.
3. Use floats to suspend the straw-filled netting in the upper 3 to 4 feet of the pond. The straw will lose its effectiveness if it sinks below this depth. Water movement near the surface will keep the straw well oxygenated and distribute the growth inhibiting chemical throughout the upper portion of the pond. This ensures that the chemical is produced where the majority of the algae are growing and away from the bottom sediments which will inactivate the chemical. Therefore, it is recommended that floats be inserted inside the netting at the same time the netting is filled with straw. The netting is then anchored into place using rope attached to bricks or concrete-filled buckets.

Where to Apply the Straw

In order to improve the distribution of the growth inhibiting chemical, CAPM recommends placing several small quantities of straw around a pond. Place each net of straw roughly equidistant from other nearby nets and the shore. The placement of the nets does not need to be exact and practical considerations such as corridors for boating and angling may influence the location of the nets. In small ponds where only one net of straw is required, place the net of straw in the center of the water body.

Acknowledgments

Much of the information in this barley straw management guide was obtained from the Centre for Aquatic Plant Management's Web site. For further information contact: Lake Water Quality Extension Program, University of Nebraska, 103 Plant Industry Bldg., Lincoln, NE 68583-0814, phone: (402) 472-7783.

Control of Cattails in Wastewater Stabilization Ponds



Control of cattails growing in or around the stabilization pond is very important. Uncontrolled cattail growth can cause stabilization pond failure. The roots of cattails can penetrate the clay liner of a stabilization pond allowing seepage to occur. The more numerous the cattails, the greater the possibility of a seepage problem. Cattails reduce the oxygen intake of a stabilization pond in many ways, such as reducing the wave action, wind action, and sunlight penetration. Cattails also encourage mosquito growth, serve as a harborage and food source for certain burrowing rodents, and add an additional organic BOD demand.

Suggested methods for cattails control are:

1. New growth cattails can be pulled by hand before the plant produces their extensive root systems, which are almost impossible to pull once established.
2. Mowing will keep vegetation low and frequent mowing may reduce the cattail population over time by depleting root food reserves.
3. Lower the water level to expose cattails and then burn with a gas burner. Burning will get rid of the top growth but, like mowing, needs frequent repetition to control regrowth.
4. Allow the surface to freeze at a low water level, raise the water level and the floating ice will pull the cattails as it rises. Best results are obtained when the cattails are young.
5. Increase water depth to above tops of cattails for a period of time to kill the plant.
6. As a last resort, cattails can be sprayed with a state registered herbicide. Aquatic herbicide applicators

may need to be licensed by the Montana Department of Agriculture (444-5400) prior to any application. Approval from the Montana Department of Environmental Quality, Water Protection Bureau (444-3080) is required prior to using a herbicide in or near a discharging wastewater stabilization pond. Operators are advised to contact their local weed district to ensure that their weed control efforts are consistent with the Districts weed control program.

LAGOON MAINTENANCE - WEEDS

Weeds must be controlled at lagoon wastewater treatment facilities.

Depending on the type of plant, e.g., cattails, grasses, noxious weeds, etc., different problems will result from the proliferation of weeds along lagoon dikes. Dikes should have all plant growth cut or removed to a few inches in height. This helps operators protect the dike from erosion and aids in inspection and maintenance of the dike. Operators must prevent animals from burrowing into dikes and watch for cracks that may develop. Valves, vaults and control structures should be easy to access and maintain. Plants, holes, erosion and cracks can lead to leakage through the dikes and bottom of the cells or complete failure of the lagoon.



Excessive plant growth in the lagoon water will encourage the build-up of scum mats. Scum mats are made up of floating material from the collection system, like grease and plastics, and often create offensive odors. Flies, mosquitoes and other pests can breed and multiply in scum mats and transport diseases from the lagoon to people, pets and other living creatures. Scum mats block wind and wave action, as do extensive weed populations, inhibiting mixing, aeration and treatment. Scum mats can be removed easily by periodic skimming of the floating material in the downwind corner of the lagoon cells and by raking it from the lagoon dikes.

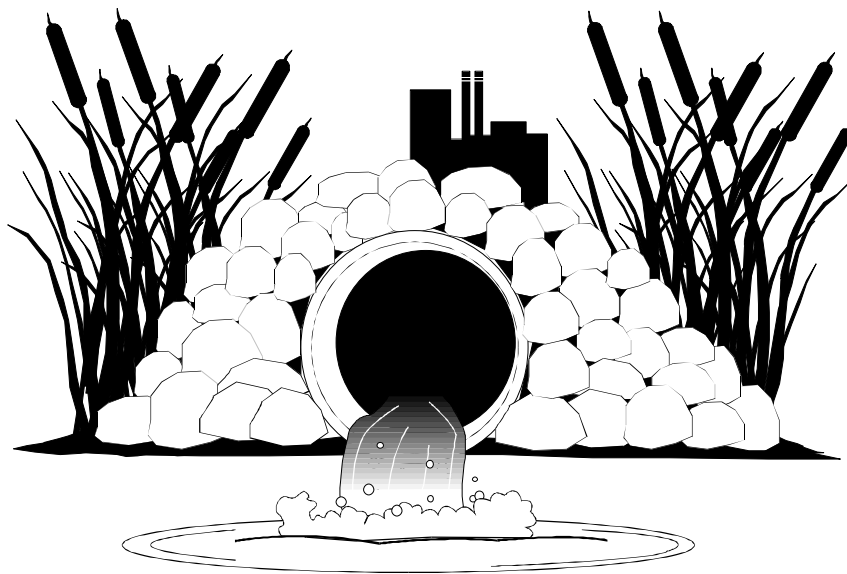
There are several strategies in use for controlling and removing various types of weeds. Weeds can be burned, pulled, sprayed and cut, along with other noninvasive, nondestructive alternative controls, like allowing sheep to graze on the land. Safety precautions must be adhered to regardless of the method used.

Application of herbicides and pesticides to control plant growth at lagoons can be effective, but certain rules must be followed:

- ◆ The chemical applicator must have a current certified applicator's license from the Montana Department of Agriculture, Agricultural Sciences Division at 444-5400.
- ◆ The chemicals used on the inside of the lagoon dikes must be suitable for waters used for irrigation. Please contact the Weed Specialists at the Department of Agriculture, your local USDA Soil Conservation District offices or MSU Extension Services for guidance on selecting the appropriate weed control chemicals.

- ◆ Coordinate the weed control efforts at your lagoons with those of your respective County Weed Control Districts. Often, they will include the exterior banks of the lagoon dikes and the lagoon site in the district weed control program in order to coordinate eradication efforts against noxious weeds.
- ◆ Apply chemicals sparingly at several different times, rather than a single heavy dose. It may take several years of consistent effort to eradicate a massive weed population. Follow all chemical application guidelines with respect to wind speed and other factors.

**DO NOT APPLY
CHEMICALS TO THE LAGOON WATERS!**



MWEA Awards

The Montana Water Environment Association (MWEA) honored Thomas Piercy, formerly the plant manager at the Butte-Silver Bow WWTP, the Water Environment Federation's William D. Hatfield Award for outstanding performance and professionalism. Tom worked at the Butte facility for 27 years and is currently operating the Galen WWTP.



Pictured L-R, Bill Bahr, DEQ and Thomas Piercy

Congratulations, Tom!

MWEA also awarded the Small System of the Year award to the City of Ronan. Kevin Templar represented Ronan's public works department at the conference in Missoula. Those folks do a great job for the citizens of Ronan.

MWEA awarded the Biosolids award to the City of Missoula and EKO Compost of Missoula. Both organizations are conscientious and working hard to provide beneficial uses for the biosolids generated at the Missoula WWTP. Starr Sullivan and Terry Munnerlyn, respectively, accepted the awards.

New Award News

We have received notification that the City of Kalispell has been awarded first in EPA Region VIII competition for Clean Water Act Recognition award. Their application will be forwarded to EPA Headquarters for consideration for a national award. Here's a big pat on the back to Joni Emrick and her staff at the Kalispell Advanced WWTP!

DEQ Asbestos Control Program

Pat Driscoll, Pierre Amicucci and John Podolinsky run the State of Montana's Asbestos Control Program. The Asbestos Control Program is housed within the Air & Waste Management Bureau/Permitting & Compliance Division of the Department of Environmental Quality.

The Asbestos Control Program oversees the permitting of asbestos abatement projects, the accreditation of asbestos-related occupations, and provides compliance assistance to the regulated community and interested parties. The Asbestos Control Program is also delegated by EPA to administer the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP, 40 CFR Part 61 Subpart M National Emission Standard for Asbestos). The asbestos NESHAP governs a host of asbestos emission sources; however, the Program administers standards that deal with building demolition/renovation activities and asbestos landfills.

This article discusses the basics of asbestos. The second article in this series discusses asbestos regulations that relate to public and commercial building owners. The third article deals with asbestos relating to homeowners, and the fourth article deals with asbestos regulations relating to contractors.

What Is Asbestos?

Asbestos is a name given to a group of naturally occurring minerals including its fibrous forms: chrysotile, amosite, crocidolite, anthophyllite, actinolite, and tremolite. The word "asbestos" is derived from the Greek language meaning quenchable or inextinguishable.



How Is Asbestos Used and Where Would You Find It?

Asbestos had been used in a variety of materials and applications for purposes of reinforcement, heat and cold



insulation, condensation control, friction, fire protection, sound dampening, decoration, texturing, chemical resistance, and other applications. Asbestos was used in over 3500 types of materials. Materials which contain more than 1% asbestos

are called asbestos-containing materials (ACM).

Typically, asbestos is found in thermal system insulation such as pipe and boiler insulation, surfacing material such as fireproofing and wallboard, and miscellaneous materials such as floor and ceiling tiles. In America, asbestos was used in a variety of materials from the late 1800s to the 1980s; however, its use has declined. Contrary to popular belief, asbestos is not banned from certain products in America. It is currently being used widely in developing and industrializing countries.

You may have run across the terms "friable" and "non-friable" asbestos-containing materials. EPA's NESHAP regulation defines friability as the ability of a dry asbestos-containing material to be crumbled, pulverized, or reduced to powder by hand pressure. Examples of friable asbestos include thermal system insulation and spray-on fireproofing. Asbestos-containing materials such as floor tile, roofing, asbestos cement products, and gaskets are typically non-friable.

Why Is Asbestos A Concern?

Asbestos is a health concern because it is a carcinogen, meaning it causes cancer. Asbestos can break down into very small fibers that can become airborne and stay airborne for a long time. Exposure generally occurs by inhalation or ingestion. Asbestos causes asbestos-related illnesses such as asbestosis, mesothelioma, and other cancers. Asbestosis is an illness characterized by the scarring of the lungs which reduces the lungs' ability to function. Mesothelioma is a cancer of the membrane lining the chest or abdominal cavity specifically related to asbestos. Lung cancer and other cancers have been linked to asbestos exposure. Epidemiological studies

(studies of people and diseases) document asbestos-related illnesses caused by exposure to asbestos in many occupations including mining, milling, manufacturing, insulating, shipbuilding, construction, and others.

Cases of asbestos-related illnesses have also been documented in persons exposed to asbestos indirectly in non-occupational settings. Wives, husbands, and children of people who worked with asbestos have contracted asbestos-related illnesses after being exposed to asbestos on the clothes of those people.

Generally, a latency period of 10 to 30 years accompanies asbestos exposure before an asbestos-related illness

develops. This latency period is dependent on other factors in a person's life, including whether the affected person smokes or smoked. According to research statistics, a smoker who is exposed to asbestos is over 50-90 times more likely to develop an asbestos-related illness than a non-smoker. The reason why smokers are so susceptible to asbestos is due to the loss of the lungs' capability to rid itself of fibers.

If you have any questions concerning asbestos, feel free to contact the Asbestos Control Program at 444-3490 or visit us at www.deq.state.mt.us/pcd/



Asbestos Regulations

This article discusses some of the asbestos regulations that relate to public and commercial building owners; it also provides some ways of dealing with asbestos containing materials (ACM). Please note, various asbestos regulations apply to each asbestos situation. Asbestos regulations that apply to public and commercial buildings differ from those that apply to schools, single-family dwellings, and other buildings. The intent of asbestos regulations is to prevent asbestos releases and exposures.

As a Public or Commercial Building Owner, What Asbestos Regulations Govern My Asbestos and Me?

In Montana, activities involving asbestos in commercial buildings are governed by one or more regulatory authorities, i.e. State of Montana DEQ, Federal EPA, and OSHA; in many cases jurisdictions and regulations overlap.

The Asbestos Control Program of the Department of Environmental Quality (DEQ) regulates and permits asbestos abatement projects, accredits asbestos-related occupations, provides compliance assistance, and administers certain sections of the Environmental Protection Agency's National Emission Standards for Hazardous Air Pollutants (NESHAP) regulation. The Asbestos Control Program regulates asbestos abatement activities involving three (3) or more square or linear feet of ACM. Asbestos abatement activities must be permitted through the Asbestos Control Program and must be conducted by accredited asbestos personnel following proper asbestos abatement, transportation, and disposal procedures.

Most of the asbestos activity in Montana involves building renovation and demolition activities. The NESHAP has a specific standard that addresses building renovations and demolitions; 40 CFR 61.145. In order to determine which requirements apply to a building owner or contractor of a renovation or demolition, an asbestos inspection is required. An asbestos inspection not only locates, quantifies, and assesses the condition of asbestos, it also provides information as to whether an asbestos containing material is regulated and regulated by which authority.

According to EPA and Asbestos Control Program regulations, an accredited asbestos inspector must perform the asbestos inspection. Typically, samples of suspect asbestos containing materials are collected by the inspector for laboratory analysis. Sample analytical costs range from \$15-30/sample. Asbestos Control Program regulations require sample analysis be done by a laboratory approved by the National Institute of Standards and Technology (NIST). In some cases it can be assumed a material contains asbestos, saving an owner some money. The Asbestos Control Program maintains a list of accredited and approved asbestos inspectors and laboratories available for your reference. Contact them for specific cost and inspection information.

In a demolition or renovation where regulated ACM is identified by the asbestos inspection, the regulated ACM would need to be removed by an accredited asbestos abatement contractor following proper abatement procedures under an asbestos abatement project permit issued by the Asbestos Control Program. The building owner or abatement contractor would apply for the permit using a form available from the Asbestos Control Program called the "Montana Asbestos Abatement Project Permit Application And NESHAP Demolition/Renovation Notification. A permit fee based on the asbestos abatement contract volume would apply. A seven (7) or ten (10) day notification period, depending on the asbestos abatement contract volume, would also apply.

In a demolition where no regulated ACM is identified by the asbestos inspection, the owner or demolition contractor must notify the Asbestos Control Program of the demolition using the same form as above, "Montana Asbestos Abatement Project Permit Application And NESHAP Demolition/Renovation Notification."

No fee applies to demolition notifications where no regulated ACM is identified; however, a ten (10) day notification period is required.

In a renovation where no ACM is identified by the asbestos inspection, no notification to the Asbestos Control Program is required.

Even though the Asbestos Control Program is delegated by EPA to administer the NESHAP, EPA is also active in Montana regulating asbestos on Indian Reservations, in private and public kindergarten through twelfth grade schools, and other buildings. Montana is part of EPA's Region VIII including North and South Dakota, Wyoming, Utah, and Colorado.

Another asbestos authority is Federal OSHA (Occupational Safety and Health Administration). OSHA regulates worker safety and health as they relate to asbestos in the general and construction industries. Prior to initiating construction activities, OSHA's asbestos standard also requires an asbestos inspection as part of its hazard communication requirement. The Asbestos Control Program's regulations have adopted by reference some of OSHA's asbestos regulations; however, for more complete information on OSHA's regulatory requirements, contact OSHA's office in Billings at (800) 488-7087.

City or county governments such as local building permitting offices or local environmental health or sanitarian's office may also have asbestos requirements, contact them before initiating demolition or renovation work. City or county governments issue building permits for general renovation/demolition activities; however, don't be tricked assuming that permit will satisfy the Asbestos Control Programs asbestos abatement permit and demolition/renovation notification requirements.

A final asbestos authority is the landfill. Prior to initiating asbestos work, contact your local landfill and learn about their asbestos disposal requirements. In many cases landfills do not accept ACM and the last place you want to learn that is at a landfill's gate. According to State of Montana Refuse Disposal Rules and the Asbestos Control Program regulations, asbestos must be disposed of in a State-approved Class II landfill.

Options: A Solution Exists!

At this point you may be scratching your head over asbestos regulations; however, rest assured that regulations exist to prevent asbestos exposure; they also may assist in limiting certain liabilities. As an owner of a commercial building that may contain asbestos, you have a few options. Armed with an asbestos inspection telling you where ACM is located, one option is to leave the ACM in place. If you do not have plans to renovate or demolish your building, the option of leaving the ACM in place is economical. Providing the ACM is in good condition, not causing exposures and not prone to damage, the ACM can be left in place, managed and monitored periodically for damage.

A second option is to encapsulate the ACM. Encapsulation involves treating the ACM with a substance that surrounds or embeds asbestos fibers. There are commercially available encapsulants and mastics specifically manufactured for such applications.

Another option is enclosure. Enclosure involves installing an airtight, impermeable, and permanent barrier around the ACM to prevent the release of asbestos. Removal is another option involving the physical removal of the material. Removal may be the only option in building demolitions or renovations.

Encapsulation, enclosure, and removal fall into the definition of asbestos abatement. In Montana, asbestos abatement actions include encapsulation, enclosure, removal, repair, renovation, placement in new construction, demolition, transportation, and disposal of friable or potentially friable asbestos containing material. Abatement actions of three (3) or more square or linear feet of ACM must be permitted through the Asbestos Control Program. As mentioned earlier, accredited asbestos personnel following proper abatement, transportation, and disposal procedures must perform abatement actions. The Asbestos Control Program has lists of accredited asbestos personnel available for your reference.

Asbestos regulations and abatement options can be confusing; however, we at the Asbestos Control Program are available to discuss your asbestos issues, so before you deal with asbestos contact us for compliance assistance at (406) 444-3490.

PWS Entry Point Sample Bottle Labels

PWS Supplies Systems with Sample Bottles Labels for Each Entry Point

*Andrea Vickory
Water Quality Specialist*

Recently, all the Public Water Supply (PWS) systems have received weatherproof labels, pre-printed by the Public Water Supply section that contain information for each entry point for their system. These weatherproof labels are to be used when the operators and systems collect chemical samples and label their sample bottles. We have made them small enough (yet legible) that the labels will not compete for space with the labels already on the bottles from the Lab. Now, the operator will fill out the same information as in the past **and then** stick the correct entry point label on the bottle as well.

Because the Department of Environmental Quality and the State certified labs are implementing a new data transfer program called Electronic Data Interface (EDI) and lab results will be electronically transferred to the state database, it is critical that the sample entry point information be available for the lab and, therefore, transferred to us. As a review, “entry point” is the location at which raw (untreated) or finished (treated) water enters the distribution system of a PWS and chemical samples include: IOCs, VOCs, SOCs, radiologicals, nitrates/nitrite, fluoride arsenic and follow-up lead and copper.

These labels **are not intended for** samples taken in the distribution system, such as coliform, routine lead and copper, disinfection byproducts, and asbestos samples. An instruction sheet will accompany the labels and we will have staff available to answer questions from the systems. PWS has been actively cleaning up our database to match systems’ inventory and we anticipate that the new labels will generate more cleanup. This cleanup process is ongoing and a large project was initiated on July 1, 2002, when we contacted all the

community systems and asked for comments to assist with this project.

What happens when a system or operator loses labels? PWS section can be contacted and we will be able to generate a new sheet of labels. What is weatherproof? Waterproof, that’s right, these labels have been quality control tested and have passed the test. We soaked them in water for days (hopefully never the real case scenario) and they remained stuck and didn’t smudge. Will we send enough? We have you covered. Each sheet will have 30 labels for each entry point. That means, even if your system is on quarterly monitoring, you will have enough for many years.



**If you have any questions, please feel free to contact us at
(406) 444-4400 or www.deq.state.mt.us**

Excavation Checklist: Competent Person

If trenching hazards are so great and the means to correct the problem is so easy, why do we still find so many trenches with no cave-in protection? Unfortunately, we find that sometimes people are willing to take chances. Let's face it — there really aren't any excuses for not providing cave-in protection.

A competent person is required as mandated in 29 CFR 1926.651(k)(1). This person will make daily inspections of excavations, the adjacent areas and protective systems for evidence of a situation that could result in possible cave-ins as well as indications of failure of protective systems, hazardous atmospheres or other hazardous conditions.

The designated competent person should have and be able to demonstrate the following:

1. Training, experience and knowledge of:
 - Soil analysis.
 - Use of protective systems.
 - Requirements of 29 CFR Part 1926 Subpart P.
2. Ability to detect:
 - Conditions that could result in cave-ins.
 - Failures in protective systems.
 - Hazardous atmospheres.
 - Other hazards including those associated with confined spaces.
3. Authority to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required.



2003 Fall Examinations!

Fall Water & Wastewater Exams

Friday • September 26, 2003

MSU-Strand Union Building • Bozeman, Montana

Registration 8:00 a.m. — Examination Period: 8:30 a.m. – 12:30 p.m.

NOTE: THERE WILL BE NO EXCEPTIONS TO THIS:

By SEPTEMBER 12, 2003, as required by ARM 17.40.208, everyone taking examinations must have sent in the following:

1. Completed application for certification as a water and/or wastewater operator;
2. Application fee of **\$70.00 per water** and/or **\$70.00 per wastewater**; and
3. Examination fee of **\$70.00 per** examination.

(Combination exams **2A3B, 3A4B, 4AB and 5AB** require **\$70.00 examination fee.**)

[Objects of revenue: Water app fee (\$70.00) 503104; Wastewater app fees (\$70.00) 503105; Exam fees (\$70.00) 503101]

To request application materials or to ask for additional information, call the certification office at 444-3434 for Reta Therriault, 444-4584 for Ashley Finnegan or write to:

**Department of Environmental Quality
 Water and Wastewater Operator Certification
 PO Box 200901 • Helena MT 59620-0901**

cut along dotted line

Fall Water & Wastewater Exams

Friday, September 26, 2003

MSU-Strand Union Building • Bozeman, Montana

Registration 8:00 a.m. — Examination Period: 8:30 a.m. – 12:30 p.m.

Water & Wastewater Operator Certification

To register for an exam, detach and return this slip with appropriate fees by **September 12, 2001**

[Objects of revenue: Water app fee (\$70.00) 503104; Wastewater app fees (\$70.00) 503105; Exam fees (\$70.00) 503101]

	1	2	3	4	5
A – Water Distribution	_____	_____	_____	_____	_____
B – Water Treatment	_____	_____	_____	_____	_____
C – Wastewater Treatment	_____	_____	_____	_____	_____

Name: _____ Operator #: _____

System Name: _____

Mailing Address: _____ Day Phone # _____

City/State/Zip: _____



CEC NAGGINGS

(THAT YOU MAYBE SHOULDN'T IGNORE)

CONGRATULATIONS to all operators who got re-certified by paying the renewal fees by June 30, 2003.

You have until May 31, 2004 to get all your continuing education credits. There are lots of fun and exciting ways to get your credits. The Montana Environmental Training Center (METC) 2003 calendar lists courses by training providers. You can also complete any of the approved correspondence courses (these are also listed in the METC calendar), or find your own class and apply to have it approved for credit. There are also some new ways to earn credits: Internet and CD-Rom courses. Remember that operators-in-training are not required to earn CEC's.

If there are any problems or questions on your CEC status or to request information on any of the training options, simply contact Ashley Eichhorn, Water/Wastewater Operator Certification Technician at (406) 444-4584.

Hope to see your
credit forms
cross my desk
soon!



APPLICANTS PASSING EXAMINATIONS FOR FULL CERTIFICATION (CO) or OPERATOR-IN-TRAINING (OT) - JANUARY 2003 - MAY 2003

<u>CLASS 1's</u>				<u>CLASS 4's</u>			
6235	BRESHEARS, CLAYTON	BILLINGS	1A CO	6216	BLETT, KYLE	GREAT FALLS	4A CO
2032	LAZZ, DOUG	BILLINGS	1A CO	6086	KASPRAK, JEREMY	GREAT FALLS	4A CO
6251	NODDINGS, CAVIN	BILLINGS	1A OT	5911	MOE, JIM	GREAT FALLS	4A CO
6094	ALLEN, CHARLES	WHITEFISH	1B OT	6087	POSEY, MARY	GREAT FALLS	4A CO
6299	BARGSTADT, CHAD	BILLINGS	1B OT	6219	WATSON, GENE	GREAT FALLS	4A CO
6201	BOWLES, STEVEN	HAVRE	1B OT	6224	CASE, LAWRENCE	GLACIER PARK	4AB OT
5039	BRIGHT WINGS, DARRELL	CROW AGENCY	1B CO	6265	DRIFT WOOD, LELAND	WYOLA	4AB OT
6223	DAHL, DWIGHT	HAVRE	1B OT	6261	DRIFTWOOD, MICHAEL	LODGE GRASS	4AB CO
6227	GIST, LYNN	HAVRE	1B OT	6232	GREIL, THOMAS	MISSOULA	4AB OT
6240	MILLER, JILL	HAVRE	1B OT	6233	HALVERSON, DANNY	CUSTER	4AB CO
6251	NODDINGS, CAVIN	BILLINGS	1B OT	6252	HARWOOD, JOHN	BILLINGS	4AB CO
5680	PORTRA, DOUG	CULBERTSON	1B OT	6172	HOLLAND, RANDY	KALISPELL	4AB CO
6184	TABOR, RONALD	FORSYTH	1B OT	6236	MARSH, ELAINE	GLACIER PK	4AB OT
6234	WOLFE, DWAYNE	MILES CITY	1B OT	6248	MOTICHKA, NEAL	KALISPELL	4AB CO
6185	BARRETT, ED	HAMILTON	1C OT	6221	NORRIS, JOSEPH	SHEPHERD	4AB CO
6200	JONES, GARY	ANACONDA	1C CO	6203	PUCKETT, BRAD	FORTINE	4AB CO
6251	NODDINGS, CAVIN	BILLINGS	1C OT	6247	YELLOWMULE, ANDREAS	YELLOWTAIL	4AB OT
6250	WAITE, MATTHEW	BILLINGS	1C OT	6199	BOYUM, JUDY	NASHUA	4AB OT
3461	GIESER, BERNARD	BILLINGS	1D CO	6220	BRODEN, KIM	LIBBY	4AB CO
6243	HARRAN, CRAIG	BILLINGS	1D OT	6202	CAMPBELL, JOSH	NOXON	4AB OT
<u>CLASS 2's</u>				<u>CLASS 4's</u>			
6128	BAKER, NICHOLAS	BILLINGS	2A CO	6210	GREIL, MARY	MISSOULA	4AB OT
6215	BROWN, GORDON	POPLAR	2A OT	6149	STOKES, DAVID	BONNER	4AB CO
6242	NUERNBERGER, HOWARD	LAUREL	2A OT	6118	WALDNER, JOSEPH J.	CUT BANK	4AB CO
4191	POZEGA, MATT	HAVRE	2A CO	6076	WIGHT, DOUG	JUDITY GAP	4AB OT
5487	WALKER, ASHLEY	POLSON	2A CO	6119	WIPF, PAUL J.	CUT BANK	4AB CO
4890	PARKE, BRAD	HAMILTON	2A3B CO	6190	HOFER, JOHN M.	STANFORD	4AB CO
5738	SKARTVED, LOREN	SHELBY	2A3B CO	6079	HILGERS, JOHN	CORAM	4AB CO
5191	BURKE, RON	GARDINER	2C CO	6257	WALDNER, GELRGE	BALIER	4AB CO
6139	LOSSMAN, FRED	STEVENSVILLE	2C OT	6138	DEENEY, BETTY	GRASS RANGE	4AB CO
<u>CLASS 3's</u>				<u>CLASS 4's</u>			
4560	FRIEDRICH, ROBERT	MISSOULA	3A4B CO	6216	BLETT, KYLE	GREAT FALLS	4B OT
6246	GALLES, LES	HOT SPRINGS	3A4B OT	6086	KASPRAK, JEREMY	GREAT FALLS	4B OT
6249	LOVATO, JOE	LODGE GRASS	3A4B CO	6231	BLACK, WILLIAN	HERON	4C OT
6116	McCREA, DOUGLAS	PABLO	3A4B CO	6199	BOYUM, JUDY	NASHUA	4C OT
6225	METZENBERG, MICHAEL	CIRCLE	3A4B OT	5905	GOHN, EARL	HUNTLEY	4C OT
6191	PORROVECCHIO, MATT	BIGFORK	3A4B OT	6067	HIRSCH, KELLY	CHOTEAU	4C CO
5513	QUINN, TAMI	LOLO	3A4B CO	6225	METZENBERG, MICHAEL	CIRCLE	4C OT
6151	SIPE, THOMAS	FAIRVIEW	3A4B CO	6248	MOTICHKA, NEAL	KALISPELL	4C CO
6117	TILTON, SCOTT	BIGFORK	3A4B OT	6208	PEDERSON, MICHAEL	SHELBY	4C CO
6177	TRUJILLO, RICARDO	GRAT FALLS	3A4B OT	6195	RICE, ELDON	ROSEBUD	4C CO
5576	CASTILLO, RAY	POLSON	3B CO	5998	WATSON, GRANT	LAMBERT	4C CO
6034	ALLISON, KEN	COLUMBIA FALLS	3C CO	6207	COBLE, WESLEY	SIMMS	4C CO
6244	CAPPAERT, JOHN	POLSON	3C OT	6138	DEENEY, BETTY	GRASS RANGE	4C CO
3840	STEFFEN, BRUCE	RED LODGE	3C CO	6077	WATERS, DALLAS	SACO	4C CO
<u>CLASS 3's</u>				<u>CLASS 5's</u>			
5513	QUINN, TAMI	LOLO	3C OT	6187	BUCHHOLZ, NORA	COLSTRIP	5AB OT
4289	WORSLEY, CECIL	GERALDINE	3C CO	6241	DUREN, ROBERT	KALISPELL	5AB OT
3614	TOMICICH, WAYNE	RED LODGE	3C CO	6182	PLUID, JACK	EUREKA	5AB CO
6100	SLOVER, CHRISTOPHER	RONAN	3C CO	5725	WALDNER, LEONARD	HAVRE	5AB CO
				6157	HOFER, WESLEY	LEWISTOWN	5AB CO
				6136	MITSCH, R. DICK	COLUMBIA FALLS	5AB CO
				6183	SANTA, SEAN	MARION	5AB CO
				6144	MELLENDEZ, KATHLEEN	BIGFORK	5AB CO

Congratulations! The exams for certification require considerable time in study and preparation. Passing represents a lot of hard work and initiative on the part of the individual. Be sure to show appreciation to your water and wastewater operator for working hard to ensure that they are properly trained to care for your system!

A = Water Distribution Operator
 B = Water Treatment Operator
 C = Wastewater System Operator
 D = Industrial Wastewater System Operator
 AB = Well Water Supply Operator
 CO = Fully Certified Operator
 OT = Operator-in-Training

Update on the Operator Reimbursement Program

It has been a year since the implementation of the Operator Reimbursement Program. To date we have processed 354 reimbursements in the amount of \$49,249.93. We hope to increase this number in fiscal year 2004. So far this program has been well received by the owners and operators of the systems.

There have been a few minor difficulties such as getting the right signatures and tax ID's or social security numbers on the forms. We are still attempting to increase awareness of the program. This will be done through informational articles, public speaking, brochures and mailings.

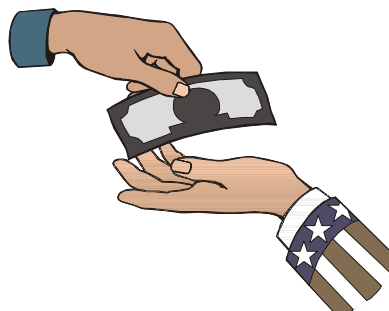
The program will continue to evolve as it grows. Over the next year we will be making some changes in the forms with the hope that they will be easier and less time consuming to fill out. We also hope to have the reimbursements tracking modules linked to our database soon. For more information on this program or to see if you qualify, please see the Reimbursement Fact Sheet.

As always, if we can answer questions or send you information, please call us.

Program Manager.....	Jenny Chambers	444-2691
Applications & Exams.....	Reta Therriault	444-3434
CEC Coordinator.....	Ashley Eichhorn	444-4584
Operator Reimbursement.....	Ruby Miller	444-0490

E-mail: rumiller@state.mt.us Fax # 444-1374

Department of Environmental Quality
 Community Service Bureaus
 Water/Waste Water Operator Certification
 PO Box 200901
 Helena, MT 59620-0901



Fact Sheet

Operator Reimbursement Program

June 30, 2003

1. The Operator Reimbursement Program began on July 1, 2002.
2. Operators must work for systems that serve 3,300 people or less.
3. The systems must be Community or Non-Transient Non-Community Public Water Supply systems.
4. Operators or system owners must initially pay for all expenses discussed below and then request reimbursement, using forms provided by the Department.
5. Expenses for wastewater certification are not eligible.
6. The operator's employment must be verified by their employer or the owner of the system.
7. Yearly renewal fees and operator training costs for continuing education credits that are required every two years are eligible. These include the cost of the course, study materials required for the course, and travel (see #9 below).
 - a. Renewal fees for State Fiscal Year 2004 will be eligible for reimbursement. You will receive a statement for these fees in April or May of 2003.
 - b. Operators must be fully certified, temporary or grand-fathered operators to receive reimbursement for continuing education credits.
 - c. Expenses for 3 or fewer operators for each system qualify for reimbursement per state fiscal year.
 - d. Operators must meet required training for the two-year CEC renewal requirements.
8. Application and exam fees and pre-exam training for applicants are eligible for reimbursement.
 - a. Applicants must have an active application with the DEQ certification office.
 - b. Only one application and one exam fee will be reimbursed per system per State fiscal year for systems with less than three operators.
 - c. Reimbursement for only one pre-exam training session per applicant is paid.
9. Mileage to and from class is eligible at current Federal rates. Per Diem for lodging and meals is eligible at State rates for **unpaid operators** only. Owners of a facility do not qualify as unpaid.
 - a. Transportation is \$.36/mile to and from the destination.
 - b. Meals are eligible if an operator travels longer than 3 continuous hours in each time range shown below and a distance greater than 15 miles from home.

i.	Morning 12:01 a.m. to 10:00 a.m.	\$ 5.00
ii.	Midday 10:01 a.m. to 3:00 p.m.	\$ 6.00
iii.	Evening 3:01 p.m. to 12:00 Midnight	\$12.00
 - c. Maximum allowable reimbursement for lodging is \$35.00 (October 15 – May 14, Plus 4% bed tax) or \$55.00 (May 15-Oct 14, Plus 4% bed tax). The single room rate must be included on the receipt.
 - d. Maximum allowable reimbursement for lodging without a receipt is \$12.00.
10. Please contact Ruby Miller at 444-4400 or 444-0490 for copies of reimbursement forms and if you should have questions.

Water and Wastewater Operator Certification News

By Jenny Chambers, Program Manager

Vacancy Announcement for the Water and Wastewater Operator Certification Advisory Council

The Water and Wastewater Operator's Advisory Council provides program stakeholder review functions.

The Council is appointed by the governor and is comprised of seven members (Administrative Rules of Montana 2-15-2105). The members are water and wastewater operators, representative of a municipality, a faculty member of a university, and a department representative.

The current position open must meet the requirements of one of the "two members who are employed wastewater treatment plant operators holding valid certificates ... no restriction of the classification of the certificate held by the other operator." Any level wastewater treatment plant operator holding a valid

certificate and employed at a wastewater treatment plant is eligible for this current position.

If you are interested in applying for this position, you must submit a letter outlining your qualifications to one or both of the following.

The deadline for submittal is **September 15, 2003**.

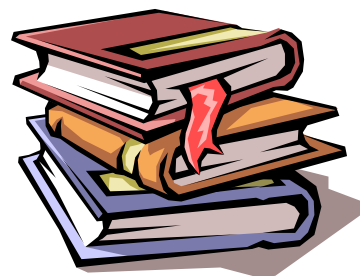
Department of Environmental Quality
Water/Wastewater Operator Certification Office
P.O. Box 200901
Helena, MT 59620-0901

Governor Judy Martz
State Capitol
Helena, MT 59620-0801

Conversion of Drinking Water Treatment and Distribution Exams

The department is moving forward with the conversion of our water exams to the standardized Associate of Boards of Certification exams. This includes all levels of water treatment and water distribution exams. The goal is to complete the revision of the study guides and exams a couple of months before the Spring Water School 2004. The first step in the process will be to hold the Job Analysis Workshop to review the ABC developed needs-to-know and then add Montana specific items. The Council provided suggestions for the group

participates to attend the Job Analysis Workshop. We are excited about this transition and feel that the wastewater conversion was a success!



Certification Belongs to the Operator, not the System

The Administrative Rules of Montana, 17.40.203(5), provide: “The department shall issue a certificate to the applicant if the applicant meets all the requirements of this chapter for certification. The **certificate is only valid to the person to whom it is issued and may not be transferred to another person.**” This rule means that the certificate is given to the operator who passes the exam and meets the experience requirement, even if the system pays for the exam and the renewal fees. If an operator leaves the system, the certificate goes with them.

This also means that no one else should use the certificate number of the certified operator on

monitoring or other records. Unless the certified operator took the sample, the certification number should not be used.

The system owner is responsible for having an operator in responsible charge (fully certified operator or a temporary certificate issued by the department) of their water or wastewater system. To ensure that they are in compliance with the public water supply requirements, all systems should check to be sure that their operator is meeting the training and renewal fee requirements.

Operator In-Training Certificates

Operator-in-training means an operator who has passed the certification examination but does not yet meet the experience requirements. In order to be classified as fully certified, an operator must have the following operator experience in a facility of that classification:

- Class 1 – two years experience
- Class 2 – one and one-half years experience
- Class 3 – one-year experience
- Class 4 – six months experience
- Class 5 – three months experience

Operators issued an operator-in-training certificate received a copy of an experience voucher. If you are an operator-in-training and have completed the necessary experience requirements noted on this voucher, please complete it and send it to our office. Upon receipt of this information the certification office will determine if the experience on the form is



acceptable, and if it is, a fully certified operator certificate will be returned to you.

If you have questions on any operator certification issues or for information about becoming a Montana certified operator, please contact me at 444-2691 or at jchambers@state.mt.us or any of the operator certification staff.

Checklist: Improving Centrifugal Pump Performance...and Profits

Over time, even a small problem can end up costing companies large amounts—such as when centrifugal pumps aren't operating at their peak efficiency. Repair and replacement costs, not to mention increased energy consumption, can usually be avoided with some simple, regular inspections and maintenance.

Although this list is not a complete guide to pump inspection and service, it does cover the more common conditions that can impair pump efficiency. It is provided by [The Gorman-Rupp Co.](#)

Suction line

- **Check for air leaks.** Using a vacuum gauge, make sure that the suction line, fittings and pipe plugs are airtight. Some pump brands have a tapped hole for easy connection of a vacuum gauge. Use pipe dope to seal gauge threads and pipe plugs. Replace leaky seals and badly worn hoses.
- **Check the suction hose lining.** The rubber lining in a suction hose can pull away from the fabric, causing partial blockage of the line. If the pump develops a high vacuum but low discharge, the hose lining may be blocking suction flow. Replace hose.
- **Check the suction strainer.** Frequent inspection and cleaning of the suction strainer is particularly important when pumping liquids containing solids. The proper size strainer should prevent pump from clogging.

Pumps

- **Check impeller vanes, wear plate or wear rings.** These components should be inspected every six months or sooner, depending on pump application. They're subject to faster wear when pumping abrasive liquids and slurries.

- **Check impeller clearance.** If the clearance between impeller and wear plate or wear rings is beyond recommended limits, pumping efficiency will be reduced. If the clearance is less than that recommended, components will wear excessively. If tolerances are too close, rubbing could cause an overload on the engine or motor. Check the impeller clearance against pump manual specifications and adjust if necessary.
- **Check the seal.** If your pump has a single seal and it is lubricated with the water being pumped, sand and other solids can cause rapid wear. Check and replace the seal if worn. Replace seal liner or shaft sleeve if it has scratches.
- **Check bearings.** Worn bearings can cause the shaft to wobble. Eventually the pump will over-heat and sooner or later it will freeze up and stop. Replace bearings at the first sign of wear.
- **Check the engine or motor.** The pump may not be getting the power it needs to operate efficiently. The engine may need a tune-up or the motor may need service.

Discharge Line

- **Check operating condition.** Check air release devices, valves, check valves and shock control devices for proper operation. Old discharge lines are subject to internal rusting and pitting, which cause friction loss and reduce flow by as much as 15 percent. Replace a badly deteriorated line.



DEQ Subdivision Review Section

Raymond Lazuk recently joined the Water Protection Bureau as the new Supervisor for the Subdivision Review Section. Ray holds a B.S. degree in environmental earth science from Eastern Connecticut State University and a M.S. degree in geology/hydrogeology from the University of Montana. Ray brings 15 years of private sector experience to DEQ as both a consultant and as a member of the regulated community. He has been involved with a variety of water resources issues across Montana, including the development of new groundwater supplies and the evaluation of water quality impacts from industrial and residential development. Ray can be reached at (406) 444-3638.

The Subdivision Review Section is responsible for ensuring compliance with the Sanitation in Subdivisions Act and associated rules. In general, this includes reviewing the adequacy of water supply, wastewater treatment and disposal, solid waste disposal, and storm water control systems for parcels of land smaller than 20

acres, and for condominiums and recreational vehicle and mobile home parks, regardless of their size. One of the key components to this review is the evaluation of water quality impacts from wastewater disposal systems in accordance with Montana's nondegradation and mixing zone rules.

The Subdivision Review Section is currently comprised of ten individuals in offices in Helena, Missoula and Ronan who are responsible for the technical review and timely processing of up to 1,300 subdivision applications that DEQ receives each year. To meet the challenge of responding to each applicant within the prescribed 60-day review time-frame, DEQ has developed a partnership program that also allows certified county health officials to review applications. The county certification program has led to a win-win situation for both DEQ and the counties by creating additional application review capacity and by enabling more local control and ownership to those most affected by the continual growth in Montana.

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To learn more about the subdivision program, current and proposed rules, and application procedures, we encourage you to visit the Subdivision Review Section's website at <http://www.deq.state.mt.us/wqinfo/Sub/Index.asp>.

Critical Issues: Filter Media Specifications

by Rick Cottingham, Water Quality Specialist

The importance of following media sizing and specifications has been illustrated by several Montana water treatment plants that installed the improper size of coal when replacing media which was lost due to backwash, time, and aging filters.

Installing the *improper* sized filter media results in particulate removal problems in the filtration barrier in the treatment process. All filter plants need to perform maintenance when they periodically measure the depth of their filters and find they have lost media resulting in thinner layers of coal. This results in shortened filter runs, less than optimal turbidity removal, frequent backwashes and, as a result, less efficient operation of the treatment plant.

In the mid-1940's there was wartime need to produce an improved water quality for processing wartime materials. Development of the coarse to fine filter took place in two steps. The first was development of a filter that used 24" of anthracite and 6 inches of silica sand. It provided a necessary coarse or roughing filter above to trap particulate from reaching the fine finishing filter media below. Each layer had it's own specific gravity (example: the coal @1.4 and the silica sand @ 2.65) so the coal at it's proper size remains on top during your backwashing procedure.

These filters worked well with turbidities of raw water being under 15 NTUs and could operate under these constant conditions at 4 to 5 gpm/sq ft and produce a high quality of finished water. These filters could retain more turbidity removed than a sand filter, but were unstable and subject to filter breakthrough at changing flow rates. This was because of the low total surface area of media particles, which was much lower than conventional filters of today.

Today's filters have a controlled mixing of media at the interface that perform better and wash better than



the beds of distinct layers of the dual media of the past. The dual media are designed today to have the coal as coarse as is consistent with particulate removal to prevent surface binding and to have the sand layer as fine as possible to still have maximum solids removal take place. If the sand was too fine it would rise above the coal in the backwash and remain there afterwards when the filter is to be returned to service. The only way to use very fine silica sand in the bottom layer would be to use a smaller diameter coal which would defeat the purpose and most likely cause surface binding. The problem of keeping a very fine medium at the bottom was overcome by using a third very fine heavy material, usually garnet, beneath the coal and sand. The garnet sand and coal particles are sized so controlled mixing occurs and no distinct interface exists between them. This sets up the necessary uniform decrease in pore space size with the increase in filter media depth.

The term "coarse to fine" actually refers then to the pore spaces rather than the media itself. This uniform decrease in pore size with filter media depth allows the entire filter bed to be used for floc removal and storage until the next backwash. This also allows for steadily increasing efficiency of

removal in the direction of flow. Some filters are further designed to add an additional layer of a lighter weight coal in addition to the normal coal-sand-garnet, thus making it possible to increase the top media without changing the size of the rest of the filter.

One of the key factors in constructing such a mixed-media bed filter is careful control of the nominal size distribution of each layer of media.

Backwashing repeated until the fines are removed after installation of each layer is essential to achieve this critical pore size distribution. Sometimes twenty to thirty percent of each layer of material might have to be skimmed and discarded to achieve proper size distribution. The benefit of three layers of filter material over two layers is only achieved only if the three media have been properly sized.

The large floc storage capacity of the mixed-media filter increases the length of the filter runs before terminal headloss is reached. So all the surface area in the grains of a mixed-media filter bed is larger than either a sand or a dual-media filter. The mixed-media filter is more resistant to breakthrough and more forgiving to surges in filter flow rates; that provides a factor of safety in filter operation. At the same time, there is an improvement in the finished water quality, and, remember, this was the original intent of the multi-media filter.

We must also remember that although we have designed a much better filter, it still is only one factor, on finished water quality, in the multi-barrier concept. Chemical dosages for optimal filtration, rather than maximum settling, and that of other variables are still much more important than the filtration rates in production of the optimal high quality of finished water production today's plant operations demand.

In today's "Move to Improve" water treatment environment and our never ending striving for the finest finished water quality obtainable from our

Montana water treatment plants, coagulation and filtration are inseparable. They are uniquely bound to one another in the liquid-solids separation process.

Therefore, when performing media replacement or changing out aged filter media, it is very important to correctly order the media specified and confirm that you receive and install the design specified media of the original filter.

Montana plants have ordered the correctly specified media and have been receiving a different size than that ordered. When installed this media has created major filtration problems in the form of higher head losses, shorter filter runs and lost media backwashing at design backwash rates.

Make certain that the media you ordered is what is delivered and what you install. Make certain that you follow manufacturer procedures in installing the media. If in doubt call either the manufacturer or your design engineer.

Draw Down Testing Could Save Your Well Pumps

By Rick Cottingham, Water Quality Specialist

As Montana goes into another hot and dry summer, public water systems across the state are showing signs of stress. Many people don't believe there is a water crisis at hand! We recently visited a city where pumps from both of the city wells were surging; that is, alternating between a pumping rate of zero and 600 gpm on a cycle of about 10 seconds. That's right, they would pump air for five seconds (zero flow) and then pump 600 gpm for five seconds. What odds would you give, had this not been detected, for the life expectancy of these pumps? What was causing the surging? Due to unusually high water usage from both inside and outside the city, from both city wells and several large irrigation wells, the water table serving these wells was being drawn down to all time low levels, thus causing the surging.

We don't yet have the means to make it rain or to prevent farmers from irrigating, which I don't believe any of us want to do anyway. However, we can help protect valuable city pumping equipment by running periodic pump draw-down tests on community wells. DEQ staff has explained this in operator training for many years, and continue to emphasize this strategy to the new "operators in training". Performing this draw-down test allows operators to track local water table levels to see if they are dropping close to the recorded pump setting. If necessary, a pump installer can lower the pump. Of course, there might be situations where the pump setting can't be changed. Should that arise, a voluntary water conservation plea



should be issued to the consumers in order to provide enough water for domestic use and maintain water for fire protection.

The draw-down test procedures are as follows: To run a draw down test on your wells, look for a pipe coming out of the well casing that has a pressure gauge and an air valve attached. This pipe is attached to a tube, which should extend to a point either five feet above or below the pump. You must know how long this tube is. For some of you, this may require a lot of digging through old records. For a few of you, unfortunately, this line may have been cut off when the pump was repaired last. In this case the line will have to be replaced. The next step is to use a tire pump or an air tank and to put air into the tube until the pressure stabilizes. Now, you need a gauge that reads in feet of water; subtract the gauge reading from the total length of the tube. If the gauge is calibrated in pounds per square inch (psi), then multiply the reading by 2.31 (ft/lb) and subtract this number from the total length of the tube. The end result is the distance from the top of the ground to the top of the water. You may notice that the gauge pressure may drop as the pump is operated. This indicates the normal draw-down associated with pump operation; the pressure should stabilize in a short time.

In order to determine how your water supply is holding out, this test should be done frequently during the hot, dry weather and more often as your water level drops in relationship to the pump. If you notice a declining water level trend, contact the Public Water Supply Section at 406-444-4400 in Helena, 406-247-4445 in Billings, or 406-755-8985 in Kalispell for assistance, in addition to taking other water conservation measures.

(Partial Reference: Water and Wastewater Digest 1988)

Operator Sentenced to Jail For Submitting False Samples

Sprinkling system also supplied drinking water to customers!

The responsibility of every operator is to provide safe drinking water to the systems customers, and the responsibility of the department is to protect public health by making sure that the systems strictly adhere to the Safe Drinking Water Act of 1996. (from the Idaho Drinking Water Newsletter)

In April 2003, an Ada County Idaho public water system operator found out that the Department of Environmental Quality (DEQ) takes its responsibility for protecting drinking water seriously.

On April 11, James Earl Waters received a sentence of 30 days incarceration with no days suspended in Ada County Court. Waters had operated a skating arena in Boise for years and had been subjected to a civil suit for failing to have adequately maintained his public water system.

According to Lance Neilsen, state Drinking Water Manager, "Waters' compliance with the court orders in the civil case had been irregular." In the fall of 2000, a magistrate ordered Waters sent to jail for five days for contempt of court for failing to comply with the state rules regarding public drinking water systems.

A year later, in the fall of 2001, DEQ became aware of a deposition given by Waters in the course of a contentious divorce proceeding. In the deposition, Waters admitted to submitting false water samples for testing. Waters used tap water from his sink at home to obtain clean samples, evidence that his divorced wife supplied the department.

In April of 2002, DEQ officials and the Idaho State Police inspected the facility, which Waters previously occupied, to determine whether

corroborating evidence existed. "The inspection revealed that the drinking water system had been hooked up to the sprinkling system and alarm devices had been bypassed," said Neilsen.

DEQ brought a criminal case against Waters for submitting the false samples in violation of department rules. Waters pled guilty to a misdemeanor "falsifying samples" charge, failed to appear for his sentencing, was arrested and later obtained a 30 day incarceration sentence.

The responsibility of every operator is to provide safe drinking water to the systems customers, and the responsibility of the department is to protect public health by making sure that the systems strictly adhere to the Safe Drinking Water Act of 1996. (From the Idaho Drinking Water Newsletter.)



Virginia Men Guilty of Improper Wastewater Treatment Operations

On July 24 in U.S. District Court in Richmond, VA, Alexander Lapteff of Nokesville, VA was found guilty of violating the Clean Water Act by negligently failing to properly operate and maintain the wastewater treatment facility at the Christchurch School in Christchurch, VA.

The jury also found Lapteff guilty of making false entries in the facility's log books, which are required to be maintained for the facility, and of making false entries on discharge monitoring reports which are required to be submitted monthly to the Virginia Department of Environmental Quality.

The investigation revealed, among other violations, the facility discharged sludge and chlorine into a tributary of the Rappahannock River. Discharging chlorine and sludge into surface water can harm fish and wildlife and can make the waters unsafe for drinking water purposes and recreation.



On July 11, co-defendant Kenneth Hinkley pled guilty to violating the Clean Water Act. Hinkley's plea agreement calls for him to surrender his wastewater treatment operator's license and to not own or operate a wastewater treatment facility in the future. Both men also face fines and possible imprisonment when sentenced. The case was investigated by the EPA Criminal Investigation Division, the FBI and the Virginia Department of Environmental Quality, and the case is being prosecuted by the U.S. Attorney's Office in Richmond.

Ground Water – What’s Happening and What’s Coming

*By Steve Kilbreath
Public Water Supply Section*

There are currently about 2,800 groundwater sources being used by public water supply systems in the State of Montana. These sources are currently being evaluated for the influence of surface water as directed by a 1986 amendment to the federal Safe Drinking Water Act. The evaluation is done as an attachment to the sanitary survey and is filled out during the routine inspections. Out of the 2,800 sources serving public systems in Montana about 2,300 have been evaluated and about 500 remain on the “to do” list. If a source is determined to be ground water under the direct influence of surface water (GWUDISW) then that source must meet the surface water treatment requirements by installing filtration and disinfection or be able to meet the criteria to avoid filtration and install disinfection. Less than 1% of all systems evaluated end up being classified as GWUDISW and having to meet the surface water treatment requirements.

The EPA is scheduled to sign the Ground Water Rule (GWR) into law in either December of 2003 or January of 2004. The GWR will have some pretty big impacts on ground water systems in Montana. The basic premise of this rule is to look at whether a source is located in a hydrogeologically sensitive setting or not. Sensitive is defined as fractured bedrock, karst limestone (caves), or alluvial sand and gravel aquifer. I would estimate that somewhere between 50% and 70% of all wells being used by public systems in Montana will be classed as sensitive. There is not much karst terrain in the state of Montana but there are a lot of wells that are located in fractured bedrock or alluvial river bottoms. The GWR goes on to say that for those systems that are hydrogeologically sensitive and are

not achieving a 4-log virus inactivation, then the system will have to prove that they are not susceptible to fecal contamination by additional sampling. The sampling will be one sample per month per well, spring, or infiltration gallery for a minimum of one year for two fecal indicators. If, during that year, any samples are positive for fecal indicators then the system will be required to remove the source of fecal contamination or disinfect the well. The time line for compliance is that community systems will have a three-year period to be in compliance and the non-community systems will have five years. We have not seen the final version of the GWR so this summary is based on the May 2000 draft.



Public Water Supply Sampling: TOC Analytical Concerns

The Stage 1 Disinfectants and Disinfection Byproducts Rule¹ established a treatment technique requirement to control disinfection byproduct precursors for systems using surface water or groundwater under the direct influence of surface water and conventional filtration. The treatment technique requires affected systems to remove total organic carbon (TOC)² either through enhanced coagulation/enhanced softening or through compliance with alternative compliance criteria. Systems must analyze source water and finished water samples for TOC to demonstrate compliance with the treatment technique requirement.

Issue Summary

- There is concern that inorganic carbon in water samples may impact the reliability of TOC analyses.
- EPA's Office of Research and Development (ORD) confirmed that inorganic carbon not properly removed from water samples prior to TOC analyses may bias results.
- Inorganic carbon (i.e., carbon dioxide, carbonate, bicarbonate), may be removed by sparging (i.e., air-stripping).
- **The analytical methods identified in *Standard Methods for the Examination of Water and Wastewater, 20th Edition* correctly describe how to measure TOC.** The current edition of *Standard Methods* specifies that inorganic carbon needs to be removed prior to analysis but did not describe a procedure, nor did *Standard Methods* specifically outline Quality Control (QC) protocols.

How is EPA addressing this issue?

- In order to clarify how inorganic carbon should be removed and establish baseline QC protocols, ORD is developing a new analytical method that will build upon the existing TOC methods.
 - The new method will describe QC protocols and include a detailed description of how to remove inorganic carbon.
 - The new TOC analytical method will be proposed as part of the Stage 2 Rule.
 - A draft version of the new method is expected to be available this summer.
- ORD tested five commercially available and commonly used instruments in a basic configuration, and observed that all instruments produce comparable data when the samples are properly prepared (i.e., sparged) prior to analysis.

Compliance Considerations

- A laboratory that correctly follows an approved method, as described in *Standard Methods*, will generate reliable data.
- A state concerned about TOC data quality may wish to review procedures with their laboratories. The state may also wish to consider the source water's potential to contain total organic carbon (e.g., historical levels).

If you have any questions or comments, please contact Ed Moriarty at (202) 564-3864 or by email at moriarty.edwardj@epa.gov.

¹Web site for more information on Rule: www.epa.gov/safewater/mdbp/dbp1.html.

²TOC must be removed from finished water at percentages specified in the Rule.

DEQ Announces Funding For Projects

The Montana Department of Environmental Quality (DEQ) has awarded contracts for \$1.9 million to 21 watershed projects and 3 information and education projects. The funding source is the Federal Clean Water Act (319) Nonpoint Source Management Program.

Recipient	Watershed	Amount
Deer Lodge Valley Conservation District	Gold Creek	\$15,115
Flathead Basin Commission	Stillwater/Whitefish	\$172,370
Green Mountain Conservation District	Prospect Creek	\$103,000
Whitefish Water and Sewer District	Swift Creek	\$ 60,000
Kootenai River Network	Tobacco Planning Area	\$136,000
Blackfoot Challenge	Blackfoot River	\$246,990
Blackfoot Challenge	Blackfoot Headwaters	\$ 39,000
Swan Ecosystem Center	Swan	\$ 84,000
Missoula County Conservation District	Ninemile	\$115,000
Tri State Water Quality Council	Ambrose/Threemile	\$ 30,000
Flathead Conservation District	Haskill Basin	\$ 34,000
Lincoln County Conservation District	Bobtail Creek	\$ 16,600
Sheridan County Conservation District	Big Muddy Creek	\$100,000
McCone County Conservation District	Redwater River	\$81,882
Beaverhead Conservation District	Beaverhead River	\$78,190
Broadwater Conservation District	Deep Creek	\$24,515
Big Hole River Foundation	Upper Big Hole River	\$72,000
Pondera County Conservation District	Dupuyer Creek	\$120,000
Teton Conservation District	Teton River	\$81,000
Park Conservation District	Upper Shields River	\$142,970
Sweet Grass Conservation District	Boulder River	\$166,230
Recipient	Information & Education	Amount
Lower Musselshell Conservation District	Saltcedar Management Plan	\$ 25,000
Montana Watercourse	Water Education and Monitoring	\$132,888
Montana Association of Conservation Districts	Riparian Education	\$ 23,850

Each project will complete one or more of the following: a water quality restoration plan, data collection and analysis, source assessment, public education, water quality monitoring, mapping, document production and/or stream restoration.

Contracts are awarded for watershed planning, information and education projects, and groundwater projects every year. For more information please contact Carole Mackin, DEQ Resource Protection Planning Bureau Information and Education Specialist at (406) 444-7425 or via email at cmackin@state.mt.us.

Swift Creek Coalition

Swift Creek Coalition

County: Flathead

Sub-Major Basin: Flathead

Affected Watershed: # Unknown

Watershed Description: Swift Creek, a major tributary to Whitefish Lake, is located in Flathead County, in northwestern Montana, and is listed as a water quality limited water body by Montana DEQ. The drainage covers approximately 49,475 acres. Swift Creek is a source of water for the City of Whitefish.

Why was a watershed effort begun? The Swift Creek Coalition has been in operation since January 2000, and is sponsored by the Whitefish County Water and Sewer District. The Coalition was started in order to investigate concerns about the potential water quality impacts that Swift Creek might be having on Whitefish Lake. Severe high bank erosion problems were thought to be a major impact. The Swift Creek Coalition's mission is to maintain a viable, healthy, and sustainable watershed for the benefit of all users through cooperation with land-owners, and the promotion of public education.

Group Accomplishments: The Flathead Conservation District obtained a Watershed Planning Assistance Grant in the summer of 2000 to fund the start-up of the Coalition. There have been considerable amounts of scientific data collected on the drainage over the years by various entities, however, a comprehensive watershed assessment has never been performed and the existing data has never been assembled and reviewed until recently when the Swift Creek Coalition contracted a professional hydrological consulting firm to perform a review of all existing data. This data review is currently being funded by a 319 grant. In related water quality survey work, the Whitefish County Water and Sewer District has received a DNRC Renewable Resource Program Grant to fund a study of Whitefish Lake (also a 303(d) listed water body). This study is expected to be completed in the spring of 2003.

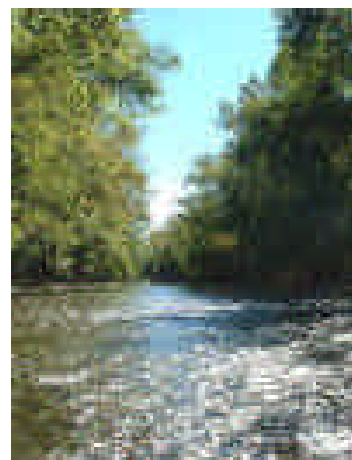
Group Plans: The Coalition has requested additional 319 grant funding for addressing data gaps identified by the existing data review. The Coalition is committed to developing a comprehensive watershed plan for the drainage which will maintain, or where needed, restore the chemical, biological and physical integrity of the Swift Creek drainage by reducing non-point pollution, stabilizing stream banks, and improving stream habitat and riparian vegetation in order to restore native fish populations and improve water quality in order to remove listed water bodies from Montana's 303(d) list.

Biggest Challenge: All involved would likely agree that obtaining adequate funding to implement restoration projects and provide for administration and management of the watershed councils is likely the biggest challenge.

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DEQ NEW STORM WATER DISCHARGE PERMITTING REQUIREMENTS

By Brian Heckenberger, DEQ

Through the Department of Environmental Quality's Montana Pollutant Discharge Elimination System (MPDES), the Department has been delegated authority by the federal Environmental Protection Agency (EPA) to permit storm water discharges. For the past eleven years the Department has been permitting storm water discharges based on EPA's Phase I storm water requirements. This includes permitting storm water discharges from specified types of industrial, mining, and oil and gas facilities, as well as permitting storm water discharges from construction projects which are disturbing over five acres of land. On February 14, 2003, new Administrative Rules of Montana (ARM) became effective which significantly expand the Department's permitting authority to include EPA's December 1999 Phase II storm water requirements. Consequently, on March 10, 2003 new Phase II requirements became effective in Montana.

As necessary, please refer to the following webpage for links to storm water permitting rules (including EPA Phase II requirements), permit documents, forms, and related information: <http://www.deq.state.mt.us/wqinfo/MPDES/PermitTypes.asp>.

The following are some more prominent potential effects of the Department's new storm water discharge permitting requirements:

1. **Smaller Construction Activities:** The criteria for determining what construction activity storm water discharges would require Department permit coverage is based on the acres of construction-related land disturbance (clearing, excavating, grading, etc.) associated with a common plan for development or sale. EPA Phase II requirements have resulted in this criteria being lowered from five acres to one acre. Consequently, construction projects disturbing between one and five acres which initiate construction on March 10, 2003 or later will require storm water discharges to be covered under the Department's MPDES *General Permit for Storm*
2. **Municipal Separate Storm Sewer Systems:** Effective March 10, 2003, the Department has initiated the permitting of storm water discharges from regulated Small Municipal Separate Storm Sewer Systems (MS4s). An "MS4" is typically a conveyance or system of conveyances owned by a state, city, town, or other public entity that discharges to state waters, and is designed or used for collecting or conveying storm water and is not part of a publicly owned sanitary sewer system. The term "Small" MS4s pertains to public entities with a population less than 100,000.



Water Discharges Associated with Construction Activity (called the "General Permit").

Furthermore, initiating in 2002, the Department has significantly changed the way it permits storm water discharges associated with construction activity. There is a new General Permit issued, a new "Notice of Intent" (NOI) permit process for obtaining coverage under the General Permit, new fees, new forms, and related new requirements. Please refer to the Department's construction storm water discharge webpage at <http://www.deq.state.mt.us/wqinfo/MPDES/StormwaterConstruction.asp> for further information. It is recommended to read the "Storm Water Requirements for Construction Activity" brochure initially as that explains the basics of the permit process.

Regulated Small MS4s within an urban area have the option of being permitted together or separately.

The initial effect of the new requirements is to regulate Small MS4s within “urbanized areas” (population centers with over 50,000 people and an average population density of at least 1,000 people per square mile), and Small MS4s with a population of over 10,000. However, larger institutions such as military bases, hospitals, correctional facilities, universities, colleges, sewer districts, and highway departments that operate a Small MS4 within “urbanized areas”, and potentially the other designated (regulated) urban areas, should be subject to General Permit coverage. For more information, refer to the definition of “small municipal separate storm sewer system” in ARM 17.30.1102(23).

By March 10, 2003 the aforementioned regulated Small MS4s were required to apply for coverage under the Small MS4 General Permit. Regulated Small MS4 permittees would have to fully implement a “Storm Water Management Program” within five years. The rules require that this Program address six “minimum control measures” as defined in ARM 17.30.1102(6).

3. Municipal Industrial Activities: Since 1991, there was a temporary exemption for permitting MPDES storm water discharges from certain industrial-related facilities/activities operated by municipalities with populations of less than 100,000. Under the EPA Phase II requirements, these industrial facilities do not require permit coverage until March 10, 2003. Refer to the new storm water rules, ARM 17.30.1105(8) and (9), for specific requirements.

Examples of municipal facilities with a storm water discharge that could be affected by this requirement include municipal wastewater treatment plants (POTWs) with a design flow of 1.0 mgd or more, local passenger transportation fleet maintenance facilities (bus, taxi, etc.), and sand and gravel pits. These facilities would typically require this permit coverage only if they are discharging storm water to surface waters as a result of a rainfall or snowmelt event. Surface waters are defined in ARM 17.30.1102(32). It is important to note that surface waters include not only natural or manmade waterbodies with water in

them year-round, but also seasonal waterbodies, or sporadic waterbodies due to rainfall/snowmelt events (such as ditches, swales, gulches, coulees, etc.).

If school bus facilities are operated by educational institutions, they do not require this permit coverage. Also, if existing sand and gravel pits are internally drained due to being topographically below the surrounding grade and/or due to highly permeable soils, they may not have a discharge to surface waters.

Effective March 10, 2003, any municipal facility requiring permit coverage as stated above is required to submit a complete permit application form, Storm Water Pollution Prevention Plan, and fees to the Storm Water Program. The aforementioned website address will provide links to the pertinent storm water MPDES General Permit webpage. Use the provided MPDES General Permit, storm water rules, forms, and other information to complete and submit the application package.

4. Solid Waste Disposal Facilities (Landfills): Under Phase I requirements, landfills discharging storm water to surface waters required permit coverage under the Department’s MPDES “General Permit for Storm Water Discharges Associated with Industrial Activity”. The municipal exemption in item #3 above did not apply to “uncontrolled sanitary landfills” as defined in ARM 17.30.1102(34). Due to the new storm water rules (smaller construction activity and removing the municipal exemption), virtually all landfills and/or their on-site cover material borrow areas will now need to have any potential storm water discharge to surface waters covered by an MPDES permit.

Storm water discharges may be associated with the actual landfill development and waste disposal area (with phased cutting, filling, and earthen material placement) or other separate regulated areas such as on-site sources of borrow material (or related management of earthen material). The following options are available for permitting these activities:

- a. If there is no potential discharge of storm water to surface waters from any regulated activity on the site, then MPDES permit coverage may not be necessary;

- b. If only a sand and gravel pit or cover material borrow area has a potential storm water discharge to surface waters, and the landfill area or other regulated areas do not, then coverage under the Department's MPDES "General Permit for Storm Water Discharges Associated with Mining and with Oil and Gas Activity" is the appropriate regulatory mechanism; and,
- c. If the landfill itself has a potential storm water discharge to surface waters, or if the landfill along with other regulated activities (such as the sand and gravel pit or cover material borrow area) have a discharge(s) to surface waters, then coverage under the Department's MPDES "General Permit for Storm Water Discharges Associated with Industrial Activity" is the appropriate regulatory mechanism. Class III landfills would have the analytical monitoring requirements under this General Permit waived.

Also, it is important to consider that unless storm water runoff is managed on-site through runoff control measures for significant storm events, it is likely landfill-related or other on-site regulated activities will have a potential discharge. The past, present, and future development of the landfill site throughout its lifetime needs to be considered in this permitting determination.

Both of these General Permits require the permittee to develop and implement a Storm Water Pollution Prevention Plan (SWPPP). If there is a Department Solid Waste License pertaining to the storm water discharge permitted activity, then the SWPPP must also be included in an updated Operation and Maintenance Plan under the Department's Solid Waste License.

- 5. Industrial No Exposure Certification Form: New requirements stated in ARM 17.30.1116 provide for a conditional no exposure exclusion. The owner/operator of a facility or activity with a "storm water discharge associated with industrial activity" or a "storm water discharge associated with mining and oil and gas activity" (does not include "storm water discharge associated with construction activity") has

the opportunity to certify to a condition of "no exposure" if their industrial materials and operations are not exposed to storm water. As long as the condition of "no exposure" exists at a certified facility, the owner/operator is excluded from MPDES industrial, mining, or oil and gas storm water permit requirements.

6. Smaller Construction Activity Permitting Waivers:

For a storm water discharge associated with construction activity that disturbs less than five acres of total land area, new requirements stated in ARM 17.30.1105(5) provide an operator(s) with a potential waiver from needing MPDES permit coverage, if they certify to either one of the following:

- a. The construction site has a low predicted rainfall potential (i.e. activity occurs during negligible rainfall period), where the rainfall erosivity factor (R Factor) is less than 5 during the period of construction activity. The Rainfall Erosivity Factor waiver uses this factor to determine whether the potential for polluted discharge is low enough to justify a waiver from permit requirements. This waiver is time sensitive and is dependent on when during the year a construction activity takes place, how long it lasts, and the expected rainfall and intensity during that time. An online calculator may be used to assist in determining the R Factor for a particular small construction site. It is expected that typically only projects that do not depend on natural growth of vegetation to achieve final stabilization of the construction-related disturbance will qualify for this. In other words, the time between initiation and final stabilization of disturbed areas must be only a few months, which may require sodding or paving of disturbed areas.
- b. A determination that storm water controls on the construction site are not necessary based on either a Total Maximum Daily Load (TMDL), or equivalent analysis for non-impaired waters, that addresses the pollutants of concern for construction activities (e.g. sediment).

Should you have any questions, feel free to contact the Storm Water Program at (406) 444-3080.

Checklist: Getting into the Habit of Conserving Water

Teaching employees to get into the habit of conserving water can be difficult when they're only reminded to do so eight out of 24 hours. To help employees become more aware of their water use and water waste, it may be helpful to encourage them to practice water-conserving techniques at home, as well.

These suggestions are courtesy of the Utah Division of Water Resources.

- Check your toilet for leaks. A leak in your toilet may be wasting more than 100 gallons of water a day. To check, put a little food coloring in your toilet tank. If, without flushing, the coloring begins to appear in the bowl, you have a leak. Adjust or replace the flush valve or call a plumber.
- Stop using your toilet as an ashtray or wastebasket. Every time you flush a cigarette butt, facial tissue or other small bit of trash down the toilet, you waste five to seven gallons of water.
- Put two plastic bottles in your toilet tank. Your toilet can flush just as efficiently with less water than it uses now. To cut down water waste, put an inch or two of sand or pebbles in each of two plastic quart bottles to weigh them down. Fill them with water, replace the lid and put them in your toilet tank, safely away from the operating mechanisms. Better yet, replace your old toilet with a new low-flow toilet. They are readily available in a variety of styles and colors. Opt for the reliable brand names.
- Take shorter showers. Long hot showers waste five to 10 gallons of water every unneeded minute. Limit your showers to the time it takes to soap up, wash down and rinse off.
- Install water-saving shower heads or flow restrictors. Most shower heads put out five to

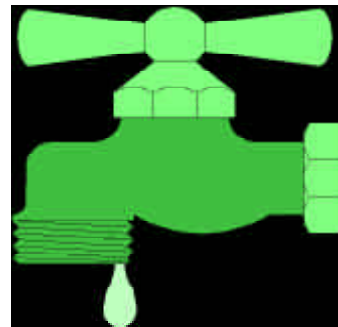


10 gallons of water a minute, while three gallons is actually enough for a refreshing cleansing shower. Your local hardware or plumbing supply store stocks inexpensive water-saving shower heads that you can install yourself. For even less money, you can purchase a small plastic insert that will limit flow through your present shower head.

- Turn off the water after you wet your toothbrush. After you have wet your toothbrush and filled a glass for rinsing your mouth, there is no need to keep water pouring down the drain.
- Rinse your razor in the sink. Before shaving, partially fill your sink with a few inches of warm water. This will rinse your blade just as efficiently as running water, and far less wastefully.
- Check faucets and pipes for leaks. Even the smallest drip from a worn washer can waste 50 or more gallons of water a day. Larger leaks can waste hundreds.
- Use your automatic dishwasher only for full loads. Every time you run your dishwasher, you use about 25 gallons of water.
- If you wash dishes by hand, don't leave the water running for rinsing. If you have two sinks, fill one with soapy water and one with rinse water. If you have but one sink, gather all

the washed dishes in the dish rack and rinse them with an inexpensive spray device.

- Don't let the faucet run while you clean vegetables. You can serve the same purpose by putting a stopper in the sink and filling the sink with clean water.
- Keep a bottle of drinking water in the refrigerator. This ends the wasteful practice of running tap water to cool it off for drinking.
- Use your automatic washing machine only for full loads. Your automatic washer uses 30 to 35 gallons of water in a cycle. That's a lot of water for three T-shirts.
- Plant drought-resistant trees and plants. There are many trees and plants that thrive with far less watering than other species.
- Put a layer of mulch around trees and plants. A layer of mulch will slow the evaporation of moisture.
- Use a broom to clean driveways, sidewalks and steps. Using a hose to push around a few leaves and scraps of paper can waste hundreds and hundreds of gallons of water.
- Don't run the hose while washing your car. Soap down your car with a pail of soapy water. Then use a hose just to rinse it off.
- Teach your children that your hose and sprinklers are not toys. There are few things more cheerful than the sound of happy children playing under a hose or sprinkler on a hot day. Unfortunately, there are also few things more wasteful of precious water.
- Water your lawn only when it needs it. Watering frequently can be very wasteful as it doesn't allow for cool spells or rainfall that can reduce the need for watering. A good way to see if your lawn needs watering is to step on some grass. If the grass springs back up when you move, it doesn't need water.
- Deep-soak your lawn. When you do water your lawn, do it just long enough for water to seep down to the roots where it won't evaporate quickly and where it will do the most good. A light sprinkling which sits on the surface will simply evaporate and be wasted. A slow steady fall of water is the best way to irrigate your lawn.
- Water during the cool parts of the day. Early morning is better than dusk since it helps prevent the growth of fungus.
- Don't water the gutter. Position your sprinklers in such a way that water lands on your lawn or garden, not on concrete, where it does no good. Avoid watering on windy days when much of your water may be carried off before it ever hits the ground.
- Check for leaks in pipes, hoses, faucets and couplings. Leaks outside the house may not seem as unbearable since they don't mess up the floor or drive you crazy at night. But they can be just as wasteful as leaks in the line from the water meter—even more wasteful.



Toxic Algae: Possible In Montana Diminished Water Supplies

By: Rick Cottingham, Water Quality Specialist

The drought conditions presently being seen in much of Montana may be ideal for setting up algae growth in Montana public water supplies. Most algae growth usually occurs in late summer during the traditional hottest months of the year. This year blooms may be earlier than most years due to extreme temperatures and lack of measurable precipitation. This article was put together from several articles on Montana algae for the education of Montana's Water and Wastewater Operators and Managers.

There are many species of algae in Montana, but only one type has produced documented lethal poisons and poses a problem to humans and livestock. A 2002 University of Montana report suggests only a single toxic specie is documented in Montana. These Blue-Green Algae blooms are toxic to all warm-blooded animals, including humans.

The University of Montana 2002 report stated, "The most common visible signs will be water that is dark-green to blue-green and may even be greenish-brown to red, hence the name Blue-Green Algae. In order for these algae to bloom, the right conditions of temperature, nutrients and light must be present. Lower water levels in ponds and reservoirs allow light to penetrate closer to the bottom of the water thereby providing the sunlight for photosynthesis necessary for growth. During dry conditions when the water levels are low there is bare soil around and above the water, which provides a solar collection area that increases soil temperature, which in turn increases the temperature of the water in the pond or reservoir. Water temperature around 72-80 degrees F for several days is adequate to stimulate growth. The low level of water increases the concentration of nutrients in these water sources, which combine to provide the correct nutrients necessary for the algae to grow."

The report explained the significance of these algae. "There is no known antidote to be affective at counteracting the effects of the toxin once it has been ingested. There are two types of toxins produced. A peptide type, which causes liver damage, but is rarely fatal. Symptoms are diarrhea, nausea, cramps or general lethargic and unthrifty animals. The other type is an alkaloid, which causes death in a relatively short time. Early symptoms from the alkaloid include staggering, muscle spasms, labored breathing and/or convulsions. Death is caused from respiratory failure and a very rigid neck observed at death."

However, not all algae blooms are toxic. To determine if an algae bloom is toxic, operators must look at several things. Mats of algae floating on or below the surface of the water, having a stringy texture that can be picked up are probably



harmless green algae. *Potentially* toxic blue-green algae are usually present as a visual surface scum. Conditions resulting from Blue-Green Algae blooms have been variously described as appearing like pea soup, grass clippings, and green latex paint. The algae scum is not stringy or easily picked up. It is a slippery, clotted mass of cells. These clots or mats of cells readily fall apart if you attempt to pick them up. When looking for this scum mat, look on the down wind side of the pond or reservoir. Animals consuming water where the toxic algae scum is present will show the effects of the toxins.

Suggested Management Alternatives

According to the University of Montana, "The best way to prevent algae poisoning is to be aware of the conditions that can produce the poisonous bloom and to prevent both humans and animals from drinking the water where this surface scum is present." Opera-

tors should check all storage areas in hot, dry weather for light to heavy green coloration of the water. If a surface scum is present, manage it as if it were a toxic bloom.

If at all possible, use an alternate water source. Conventional treatment and disinfection afforded most public water supplies are not effective in removing or deactivating Blue-Green Algae toxins. If no other source of water is available, the next best thing is to take water only on the upwind side of the reservoir or pond where wind and water currents float the scum away from intakes.

It is also possible to construct a floating barrier that sinks into at least the top 4 inches of water, which will keep the surface scum away from the area where surface water is taken. This type of barrier can be built of logs, Styrofoam, or other floating materials. It must isolate the area completely and not allow the surface scum to seep or leak into the intake area. The barriers should be large enough and built over deep enough water so intake will not be able to pull beyond it.

Once scum has formed it is not practical to build an effective barrier to clear the scum away. If conditions are likely to favor a bloom, it is best to build the barrier before the scum develops. Another option is

to pump water via a waterline from a subsurface location in a deeper part of the reservoir to the water intake. Transferring the water to the tank can be done by one of several methods, gravity, siphoning, or motorized pumps.

Chemical control with herbicides is also an option. The basic herbicide used in Montana ponds and lakes to control algae growth is Copper Sulfate. This is the most commonly used chemical in controlling public water supply storage reservoirs in Montana. Copper Sulfate can be directly applied to lakes and ponds to control most algae growths of the colonial, filamentous, and single cell types. However, Copper Sulfate should be used with extreme caution and its use may require a special application license with the Montana Department of Agriculture. Be careful and utilize all available safety precautions.

However, copper is a toxic metal that is long-lived (persistent) in the environment. Copper sulfate can be toxic to fish and aquatic animals at concentrations near levels used to control algae, especially in soft water. As the Copper toxicity increases, water hardness decreases. Copper Sulfate should not be used in extremely soft waters (alkalinity values less than 50 mg/L, but most of Montana surface waters are higher). Other water use restrictions may apply.

Toxic Algae Fact Sheet

WHAT ARE ALGAE? Algae are small, often microscopic plants, which lack specialized structures like leaves, stems, and roots.



ARE ALL ALGAE TOXIC? No. In Montana, only certain species of blue-green algae are capable of producing toxins, and even these species are harmless most of the time.

WHAT ARE BLUE-GREEN ALGAE? Blue-green algae are the most primitive form of algae, similar in structure to bacteria. Algae are microscopic organisms, which are common in surface waters and wet areas throughout Montana.

WHERE ARE TOXIC BLUE-GREEN ALGAE FOUND? Potentially toxic blue-green algae occur throughout Montana in any standing bodies of water exposed to the sun, e.g., lakes, reservoirs, stockponds, and roadside ditches. They normally are not found in rivers, streams, springs, irrigation canals, or wells.

WHAT CONDITIONS FAVOR THE GROWTH OF TOXIC BLUE-GREEN ALGAE? Potentially toxic blue-green algae prefer warm, clear waters that are rich in plant nutrients, especially phosphorus.

WHAT SPECIES OF BLUE-GREEN ALGAE ARE TOXIC? In Montana, only one species of blue green algae—*Anabaena flos-aquae*—has ever been documented as a toxin producer. Two other species common in Montana—*Aphanizomenon flos-aquae* and *Microcystis aeruginosa*— have produced toxins elsewhere.

WHAT IS AN ALGAE BLOOM? An algae bloom is a rapid and massive buildup of algae cells that imparts a green color to the water. Sometimes the algae can be further concentrated along the shore by wind and wave action.

WHAT CONDITIONS LEAD TO BLOOMS? Blue-green algae blooms can occur anytime from May through October, but they normally occur during the hottest part of the summer—June, July, and August.

WHAT DOES A BLOOM LOOK LIKE? A bloom of potentially toxic blue-green algae appears as “pea soup,” “grass clippings,” or “green latex paint.” The algae usually are suspended in the water column or aggregated into floating mats; they do not grow from the bottom as do mosses or “water weeds.”

HOW DO I KNOW IF A TOXIN IS PRESENT? There is no way to tell for sure if the water is toxic unless some of it is actually injected into an experimental laboratory animal. Harmless strains of potential toxin-producing algae look the same as deadly strains under a microscope. A toxin will impart no distinguishing odor, test, or color to the water in which it is dissolved.

CAN WATER BE TREATED TO REMOVE THE TOXIN? Conventional treatment and disinfection afforded most public drinking water supplies are not effective in removing or deactivating blue-green algae toxins. Water that is free of blue-green algae may not be free of the toxin. Boiling is similarly ineffective.

WHAT ANIMALS ARE SUSCEPTIBLE TO THE TOXIN? Essentially, all warm-blooded animals are susceptible to blue-green algae toxins, including people, waterfowl, furbearers, game and non-game animals, livestock, poultry, and household pets.

ARE FISH AFFECTED? Fish kills associated with algae blooms are most likely due to depletion of dissolved oxygen rather than the toxic blue-greens, although fish kills resulting directly from algae toxins have been reported.

ARE FISH FROM ALGAE-INFESTED WATERS SAFE TO EAT? Although fish taken from waters infested with toxic algae are not likely to cause secondary poisoning if eaten in moderation, they may taste “weedy.” It is advisable to shun fish taken from such waters, particularly if they appear sickly or sluggish.

HOW MANY KINDS OF ALGAE TOXINS ARE THERE? There are two basic kinds of algae toxins: (1) the milder peptide type is rarely fatal but may produce liver damage and general long term debility; and (2) the more potent alkaloid type is usually fatal within a short time.

WHAT ARE THE SYMPTOMS OF TOXIC ALGAE POISONING? The peptide toxin may produce diarrhea, nausea, cramps or general lethargy and unthriftiness in animals. The alkaloid toxin may cause staggering, muscle spasms, labored breathing, or convulsions. A very rigid neck is characteristic at death; death is caused by respiratory arrest. In people who unwittingly ingest the toxin, sensations of numbness, dizziness, tingling, and fainting may be manifest.

IS THERE AN ANTIDOTE? There is no antidote known to be effective at counteracting the effects of the toxin once it has been ingested.

IS THERE ANY WAY TO CONTROL TOXIC ALGAE? The time to control a toxic algae bloom is before the bloom develops. Assuring that fertilizers, animal wastes and other sources of nutrients do not reach the water is the best preventative. The county extension agent, NRCS office or conservation district can assist landowners in finding best management practices that address the specific needs of their operations.

IF YOU HAVE ADDITIONAL QUESTIONS OR WANT MORE INFORMATION ON TOXIC BLUE-GREEN ALGAE, CONTACT:

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
1520 E. 6TH AVE
P.O. BOX 200901
HELENA MT 59620-0901

OR TELEPHONE (406) 444-6697

Pollution Prevention News

The DEQ Pollution Prevention Bureau, Business and Community Assistance Section, recently submitted a grant request to the EPA. The purpose of the grant was to assist in the funding of a mobile glass pulverizer. The glass pulverizer will be mounted to a trailer with a 50KW generator and would be moved around the state to process recycled glass. The glass cullet can be used in landscaping, septic tank drain field, road base aggregate filler and various other uses.

The Montana Department of Transportation (MDT) recently changed their specifications to allow glass cullet in road base which provide a local market for glass cullet. The DEQ will be notified in late June or early July if the grant was approved or not.



Mobile Glass Pulverizer

If you should have any other questions, please do not hesitate to contact Brian Spangler, Supervisor, Business and Community Assistance Section, phone (406) 444-5307 or e-mail bspangler@state.mt.us.

Operator Examination Preparation Sessions

Helena, Montana
September 3-4, 2003

METC and DEQ will be holding Operator Examination Preparation Sessions in the Metcalf Building in Helena on September 3rd and 4th. If you are preparing to take an exam this fall at Fall School, this is a great opportunity to devote a day and a half to covering the critical material that will be covered by the test questions. The sessions are designed for those taking the Water Treatment tests for Groundwater and Surface Water Treatment Systems and Distribution Systems, and for Domestic and Industrial Wastewater Treatment Systems.

The sessions are designed to cover the topics in the study guides and study materials. Additionally, the trainers will review mathematical computations, terminology, trouble shooting, and other relevant topics.

The key help that prospective operators will derive will be to discover what areas they need the most help with for the exam and still have three weeks to review those areas.

Plan to attend these sessions if you are struggling with preparing to take the operator examinations. Contact METC at 406-771-4433 or 4432 for more information.



Wastewater Treatment System



Reverse Osmosis System

70th Annual Fall School

Agenda

Monday, September 22, 2003

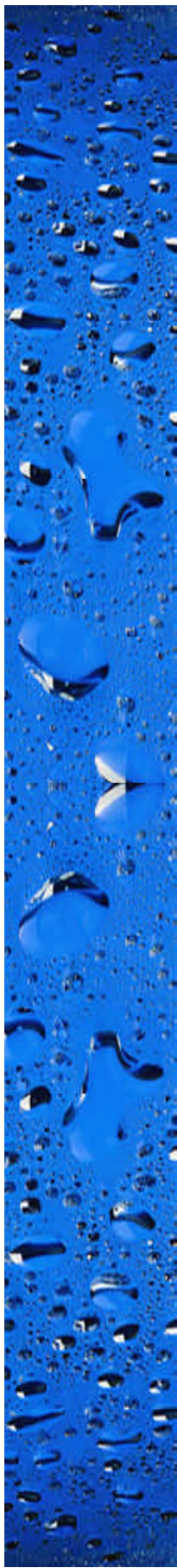
General Opening Session
Operator Responsibilities
Update on Research at the Biofilm Research Center at MSU
Connections Between Public Health and Drinking Water Systems
Vulnerability Assessments, Emergency Response Planning and Security Enhancement
Vendor Exhibition
Operator Examination Preparation Sessions

Tuesday, September 23, 2003

Anti-terrorism Activities for Public Utilities
Wastewater Microbiology and Laboratory
Lagoon Retrofitting
Anaerobic Digester Start Up
Filter Membranes
Source Water Protection
Ultraviolet Light Disinfection
Digester Start Up and Odor Problems
Process Control Strategies in WWTPs
Security Case Studies
Pumps and Motors
WWTP Tour
Operator Examination Preparation Sessions

Wednesday, September 24, 2003

LT1 And LT2 Rules
PWS Deficiencies
Distribution System Tour
Chemicals in Wastewater Treatment
Trouble Shooting Lagoon Systems
Groundwater Rule and Model
Call Before You Dig
Micro Tunneling and Pipe Bursting
MPDES Permit Issues
TMDLs and Watersheds
Disinfection Byproducts and Stage 2 Rules
Storage Tank Cleaning



Wednesday, September 24, 2003 - Continued

Elements of a CMOM Program
Septage Handling Programs
Trench Safety and Fire Rescue
WWTP Vulnerability Assessments – Case Studies
Operator Examination Preparation Sessions

Thursday, September 25, 2003

Cross-Connection Programs
Drought Issues for Public Water Systems
Process Control Technology
Research Projects to Help Water and Wastewater Systems
Operator Examination Preparation Sessions (AM and PM)



2003 Montana Watershed Symposium

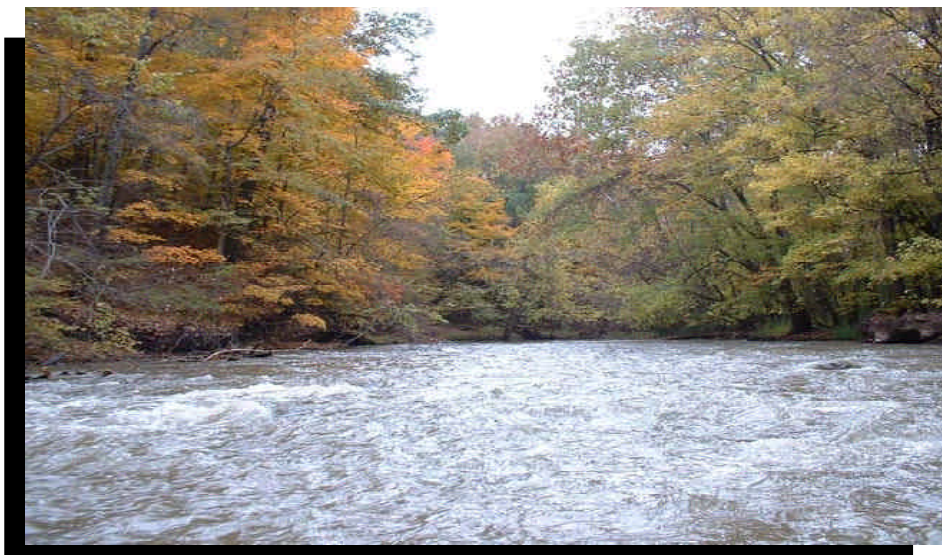
Holiday Inn • Great Falls, Montana

December 8-9, 2003

The Montana Watershed Coordination Council invites water and wastewater plant operators to attend the second Montana Watershed Symposium, Opportunities for Communities and Landscapes. The symposium will motivate, celebrate, educate and connect individuals interested in the watershed approach. Participants will gain a better understanding of watersheds and how the watershed approach is used to solve local problems and maximize the effectiveness of scarce resources. Others attending are watershed coordinators and consultants, Conservation District administrators and supervisors, agency professionals, local and state government officials, and those involved in watershed groups from Montana, Colorado, Wyoming and Idaho.

The 2003 Montana Watershed Symposium builds on the success of the 1997 symposium that attracted 234 people. Mark your calendar for Great Falls, December 8-9 at the Holiday Inn.

Registration is required and scholarships are available. Please contact Karen Filipovich (406) 994-6671 or kfilipovich@montana.edu for more information about this event or check <http://water.montana.edu/watersheds/default.asp> for more details.





Do not attempt to take this route...

unless you're prepared for a cold dunkin'!