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Opflow

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Hot H_2O—Winter Potion for Thawing Out Pipes

The following article has been adapted from a pamphlet entitled Grounding, Locating and Thawing Procedures for Water Mains and Services, *published by Uni-Bell PVC Pipe Association (Dallas, Texas).*

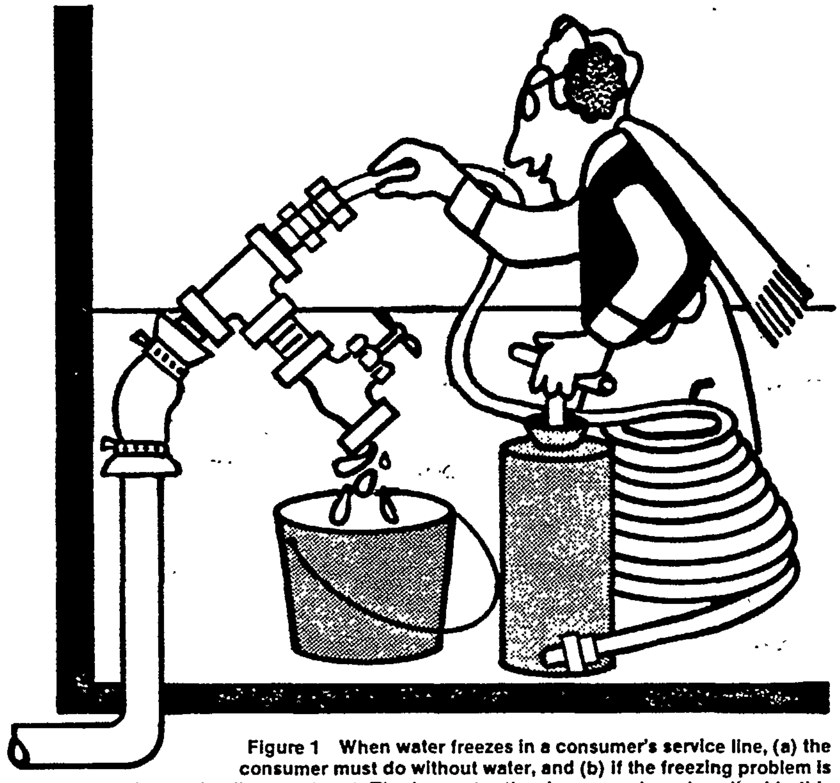

Figure 1 When water freezes in a consumer's service line, (a) the consumer must do without water, and (b) if the freezing problem is severe, the service line can burst. The hot-water thawing procedure described in this article provides an effective and inexpensive method for "unfreezing" frozen service lines.

In cold climate zones, where temperatures are below freezing for long periods of time, water in consumer service lines can freeze. If this problem occurs, consumers will, of course, receive no water. A more serious problem can result, however, if the freezing problem is severe. As water freezes and becomes ice, it expands. The expansion of freezing water in a pipeline can burst the pipeline, leading to expensive and time-consuming repairs.

To prevent freeze-ups, consumer service lines should be buried at least 6-12 in. (150-300 mm) below the normal frost depth. The type of earth cover placed (backfilled) over the service lines is also important. Frost can usually penetrate sand and loose gravel more easily than heavy clay soils. Therefore, in areas where sand and gravel are the main backfill material, it may be necessary to bury service lines deeper than 6-12 in. (150-300 mm).

Electrical Thawing Can Be Dangerous

Thawing frozen service lines is difficult regardless of the type of pipe in use. For metal service lines, electrical thawing methods are sometimes used. To perform electrical thawing, a welder or transformer is used to send low voltage AC and DC current through the service line to melt the ice. The welder or transformer is connected in two places: (1) inside the home, and (2) either at a fire hydrant, the main stop (requiring excavation), the curb stop at the valve box, or on a valve key.

Electrical thawing can be dangerous because there may be (a) poor conductivity at the joints between sections of pipes, (b) poor conductivity between the electrical grounds to the pipes, or (c) direct contact with other metal pipes, such as natural-gas pipelines. In addition, electrical thawing can melt any soldered joints in the service lines if the thawing procedure is not performed carefully.

When electrical thawing is used, any *elastomeric* (elastic-like) materials that are used to join sections of metal service line can become overheated, disintegrate, or harden, resulting in leakage. In addition, any electrical circuits grounded to the distribution system can be damaged or destroyed. In a few cases, homes have been destroyed by fires as a result of electrical thawing attempts.

The problems with electrical thawing cannot be eliminated, but they may be lessened by using only low-voltage generators or transformers. When these devices are used, voltage and amperage must be competently supervised and monitored at all times.

Hot-Water Thawing—An Alternative

Since there are some dangers with electrical thawing and since plastic service lines cannot be thawed electrically, some utilities prefer to use a technique known as *hot-water thawing*. (See Figure 1.) In this technique, hot water is pumped into frozen service lines through a small flexible tube that is fed into the service line. (See Figures 2 and 3.) The hot-water thawing procedure described in this article is intended for use where the meter is installed inside

(continued on page 6)

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Certification Corner (answers on page 8)

Most of the questions and answers in Certification Corner have been obtained from certification boards throughout the United States and the Association of Boards of Certification (ABC). As much as possible, their wording remains unchanged in order to represent an actual certification exam.

Because these brief questions and answers are designed to test an operator's basic knowledge of an existing system, they do not take into account many of the detailed factors that should be considered by an advanced operator or design engineer. Additionally, some of the questions may not apply to every operator's situation because of the varying requirements of certification tests in different states and at different levels.

Operators interested in more information should refer to AWWA manuals and handbooks, especially *Basic Science Concepts and Applications, Operator Certification Study Guide,* and *Safe Drinking Water Act Self-Study Training Course.*

1. Match the phrase in the left column with the correct item in the right column.

a. Bacteriological Incubation Temperature for total coliform test	1. 0.433 psi
b. Usual or normal filtration rate for rapid sand filters	2. 35° C
c. MCL for Pb in drinking water	3. 62.4 lb/cu ft
d. MCL for NO_3 (as *N*) in drinking water	4. 694 gpm
e. 1 ft of water	5. 0.05 mg/L
f. Radiation units for drinking-water standards	6. 10 mg/L
g. 1 MGD	7. pCi/L
h. Chlorine is ________ times as dense as air	8. 2.5
i. Density of H_2O	9. 2 gpm/sq ft

2. A jar-test dosage called for 3.0 mL of 10 g/L stock alum solution in a 1000-mL sample. How many pounds per day of alum must be added to 700 gpm to simulate the jar-test dosage?

3. What is the chlorine demand of a water supply if (a) the free available chlorine residual is 0.5 ppm, (b) the dosage is 11 lb of chlorine per day, and (c) the flow rate is 500 gpm?

4. How many pounds are equivalent to 227 grams?

5. If the temperature reads 77° F, what is the temperature reading in degrees Celsius?

6. Identify the common functions of the following reagents in a waterworks laboratory:
   a. Sulfuric acid
   b. EDTA
   c. SPADNS solution
   d. Starch indicator
   e. Phenolphthalein

7. Which one of the following mineral constituents of drinking water is a major public health concern?
   a. Boron
   b. Iron
   c. Sulfates
   d. Nitrates
   e. Chlorides

CORRECTION

There was an error in the October 1982 issue of *OpFlow* in the article entitled "Breakpoint Chlorination—the Chemistry of Chlorine." In Eq 3 of Table 1 (page 6), Na(OH) was incorrectly labelled as sodium hypochlorite. The correct chemical name for Na(OH) is sodium hydroxide. Ralph Leidholdt, author of the article, was not responsible for the error.

The correct equation for the chemical reaction that occurs when sodium hypochlorite (NaOCl) is added to water is as follows:

$$\underset{\text{sodium hypochlorite}}{NaOCl} + \underset{\text{water}}{H_2O} \rightleftharpoons \underset{\text{hypochlorous acid}}{HOCl} + \underset{\text{sodium hydroxide}}{Na(OH)} \quad \text{Eq 3}$$

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Stopping by a Pipeline on a Snowy Afternoon

A note on page 2 of the March 1982 issue of *OpFlow* requested readers to send in any interesting or unusual work-related photos. Lorna Kremer of Rochester Water Works (Rochester, N.Y.) sent in the photo shown here of a rather unusual "consultant" on one of RWW's jobs. Lorna reports that while one of RWW's crews was inspecting conduit lines in a pasture last winter, three horses decided to provide some technical assistance (i.e., horse sense). The photo shows one of the crew members, Rick Croft, taking notes on the condition of one of the valves. While Rick was busy "making a list and checking it twice," a very concerned four-footed friend came up to help out with the project. As the photo shows, Rick and the horse got along very well together.

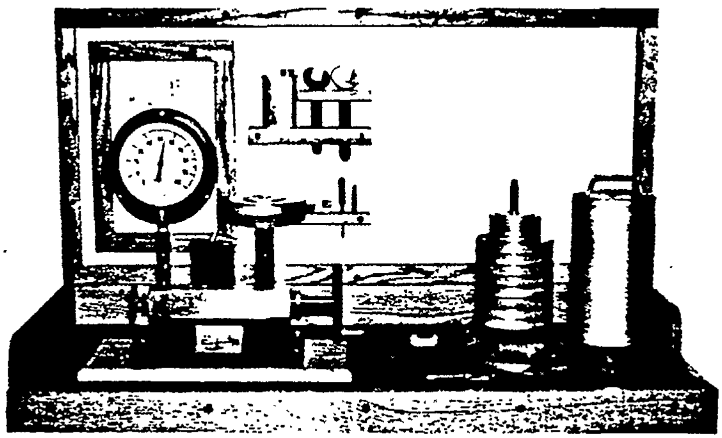
When one of AWWA's freelance photographers, Artie Stubbs, saw the photo, he was reminded of the old TV show *Mr. Ed*, which featured a talking horse. Artie provided the caption for the photo, which, he assured us, came "straight from the horse's mouth" (not shown in the photo).

"Looks like somebody left that gate valve open, Wilbur. Want me to give it a little kick?"

Checking Pressure Gauges and Thermometers

R.B. Klausegger
Chief Operator
Grandwood Park Treatment Plant
Gurnee, Ill.

Pressure gauges and thermometers help operators test the performance of water treatment equipment and are important instruments in every inspection and maintenance program. To be sure that pressure gauges and thermometers are measuring accurately, they should be inspected and tested on a regular basis.



A dead-weight indicator can be used to check the accuracy of pressure gauges.

Pressure Gauges

Although a new pressure gauge may be guaranteed to be accurate and free from damage during shipment, it should be checked when it is received to ensure that it is operating properly. A *dead-weight indicator* (also called a *dead-weight pressure-gauge tester*), can be used to check the accuracy of pressure gauges. (See the photograph accompanying this article.) To keep pressure gauges in good operating condition, they should be calibrated on a yearly basis, using a dead-weight indicator.

Frequently, calibrating pressure gauges is difficult because of the expense of the dead-weight indicator. One solution to this problem is for a treatment plant or AWWA section to buy a dead-weight indicator and make it available to local operators. Operators can bring their pressure gauges to the treatment plant or section headquarters both to receive instructions and to calibrate their gauges free of charge.

Thermometers

There are several ways to check the accuracy of a thermometer. One method is to fill a container with cracked ice. As the ice starts to melt, insert the thermometer bulb into the ice-and-water mixture. The thermometer should read 32°F (0°C). If it does not show this temperature, it is inaccurate and should be discarded. To check thermometers for accuracy at high temperatures, insert the bulb into boiling water. At sea level the thermometer should read 212°F (100°C). If it does not, it is inaccurate and should be discarded.

The most common method used to test the accuracy of thermometers is to compare thermometers to a *comparator*—a thermometer known to be accurate. Since comparators can become inaccurate due to handling and vibrations, their accuracy should be checked occasionally using the ice and boiling-water tests described above.

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Guidelines for Handling Lab Chemicals Safely

The following article has been adapted from Basic Laboratory Skills for Water and Wastewater Analysts, *by Douglas W. Clark (published by the New Mexico Water Resources Research Institute).*

Workers in water treatment laboratories are exposed to many chemicals. Some of these chemicals can cause serious injury when taken into the body through skin contact, eye contact, breathing, or swallowing. As such, lab workers should be safety-conscious whenever working with chemicals. Table 1 lists several safety precautions lab workers should follow to prevent serious injury.

Lab personnel should observe safety rules when working with chemicals.

Labelling Chemicals

Labelling chemicals properly is not only a safe practice to follow, it is required by law. In general, any time a chemical is put into a new container, a duplicate of the original label should be firmly attached to the new container. When making labels, avoid wax-pencil and water-soluble-ink markings, abbreviations, formulas without names, codes, and numbers.

Each label should include (1) the name of the chemical; (2) a word to indicate the severity of the hazards (if any), such as *Caution, Warning,* or *Danger*; (3) a summary of the hazards, beginning with the most serious; (4) precautions to take when using, storing, or handling the chemical; and (5) instructions to follow in case of accidental exposure or contact. The date a chemical is opened or prepared should also appear on the label so that out-of-date chemicals can be thrown away. Finally, a label should include the name or initials of the person who prepared the contents.

Many water treatment labs use special stick-on safety labels provided by chemical suppliers. Each label is marked with a picture and a phrase that describes the danger of the chemical. For example, the label for a poisonous chemical, such as chlorine, shows a drawing of a skull and cross bones and is marked with the word POISON. Table 2 shows several examples of chemical safety labels.

Storing Chemicals

A good rule for storing chemicals is to keep only the necessary types and amounts of chemicals on hand. Throw away excess, out-of-date, or unused chemicals. In addition, check storage containers to be sure they are in good condition. Replace damaged containers immediately.

Storage areas should be designed to handle both the quantities and types of chemicals stored. They should be cool, well-lighted, and well-ventilated rooms that are separated from the laboratory by fire walls. Automatic sprinkler systems should be installed in areas where chemicals that will not react with water are stored. Chemicals should not be crowded together on shelves, and chemicals that could react together should not be stored together. Storing chemicals by a simple alphabetical arrangement is a dangerous practice.

Handling Liquid Corrosive Irritants

Corrosive irritants are chemicals that will dissolve or damage substances with which they come in contact. Corrosive irritants may be in the form of liquids, solids, or gases. Some examples of corrosive irritants are hydrochloric acid, caustic soda (sodium hydroxide), and anhydrous ammonia. Corrosive irritants in liquid form require special care in handling.

Liquid corrosive irritants can cause serious injuries to eyes and skin. To protect against injury from liquid corrosive irritants, lab workers should wear appropriate protective clothing—rubber gloves, safety goggles, face shields, and rubber aprons. If a corrosive liquid is accidentally spilled on the skin or splashed in the eyes, the part of the body contacted should be immediately rinsed with large amounts of water.

Large bottles of corrosive liquids should be stored below head level. They should be placed in pans or similar containers that will not be damaged if the bottles break or leak. The pans should be made of *corrosion-resistant* materials, such as stainless steel, lead, or rubber. Trays or buckets also made of corrosion-resistant materials should be used when moving bottles of corrosive liquids to or from storage areas.

Lab Safety Equipment

Lab safety equipment includes first aid kits, safety shields, fire extinguishers, containers for carrying flammable or corrosive liquids, emergency showers, eyewashes, and fume hoods. Several of these items deserve special attention.

Emergency showers should be visible and easy to reach from any work area. They should be located away from electrical or other hazardous equipment. Their location should be clearly marked on the floor to help injured personnel find them.

For More Information

For additional data about the features in this issue, consult the following AWWA publications:

Title	*Cat. No.*
Handling Lab Chemicals Safely	
AWWA Manual M3, *Safety Practice for Water Utilities*	30003
Plant Equipment Maintenance	
AWWA Manual M8, *Water Distribution Training Course*	30008

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Stall showers or multiple-head showers are best if space permits. The pull ring to turn the shower on should not be higher than 6 ft 8 in. (2 m) from the floor.

Eyewashes are often installed together with emergency showers but may be installed separately at sinks or other areas. The water from an eyewash should be at a moderate temperature, aerated (mixed with air), and in soft streams that will wash the eyes without damaging delicate eye tissues.

Fume hoods should be located in low-traffic areas away from doorways, ventilation outlets, or other sources of air disturbance. They should be made of tough, chemical-resistant materials, such as cast epoxy or epoxy-coated asbestos cement. The exhaust system should provide an air flow of at least 100 lin fpm (0.5 m/s) across the face of the hood. The exhaust system should be able to run 24 hours a day. All interior electrical fixtures, including the exhaust fan, should be explosion-proof. All switches, electrical outlets, water controls, and gas controls should be located outside the hood.

Bodily Protection

Protective equipment for the body is very important. The following equipment should be available in all laboratories.

Eye protection. A lab worker's eyes should be protected at all times. Such protection should include safety glasses (preferably with side shields), goggles, or face shields. During very dangerous work, face shields should be worn with goggles or safety glasses for more complete protection. Contact lenses should never be worn in the laboratory—chemicals can become trapped between the lens and the surface of the eye and are extremely difficult to remove.

Hand protection. Cotton, leather, or leather-faced gloves should be worn when handling *abrasives* (substances that scratch or scrape) or sharp objects. Rubber or plastic-coated gloves should be worn when handling strong chemicals. Lightweight, surgical gloves should be worn when working with weaker chemicals or unsafe bacteriological samples. Heavy-duty gloves should be worn when working with strong acids and other corrosive chemicals. Asbestos gloves should be used for handling hot equipment or materials. The palm surface of gloves used for lab work should be "roughened" so that lab personnel can hold wet glassware securely.

Foot protection. Leather shoes are adequate for general laboratory work. However, rubber safety shoes should be worn if water, acid, or other liquids are likely to be spilled on the floor. Shoes with built-in steel-toe caps are needed only when heavy objects are being moved. Tennis shoes or open-weave footwear should never be worn in the laboratory.

Respiratory protection. If chemical fumes, gases, or dust will be in the air, a self-contained breathing apparatus (air pack) should be used. (For a detailed discussion of air packs, see the Oct. 1982 issue of *OpFlow*, page 4.)

Fire Extinguishers

All laboratories should be equipped with fire extinguishers. Extinguishers should be placed in obvious locations in hallways and near the doorways of workrooms. In addition, the extinguishers used should be the proper type and size to handle the type of fire that could occur in the lab. AWWA Manual M3 includes a chart that shows the appropriate type and size of fire extinguisher to use.

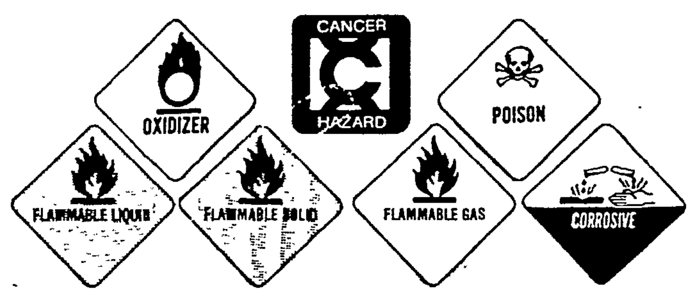
If there is more than one extinguisher in a particular workroom, all extinguishers should be easy to reach from all parts of the room. Lights, signs, and arrows should indicate where the extinguishers are. Portable fire extinguishers should be recharged after every use, inspected periodically, and maintained in accordance with National Fire Protection Association standard NFPA 10 (1981), Standard for Portable Fire Extinguishers. To obtain a copy of this standard, readers may contact:

National Fire Protection Association
Batterymarch Park
Quincy, MA 02269
(617) 328-9290

Table 1
Safety Precautions for Chemicals

1. Laboratory work is a serious and potentially dangerous activity, and a lab worker should act accordingly.
2. Anyone working in the laboratory should be familiar with the safety procedures for each operation and the locations of all safety equipment.
3. Smoking, eating, and drinking should never be permitted in the laboratory. Laboratory vessels should never be used to hold food or beverages.
4. Pipetting (the process of drawing chemicals into a long, narrow tube) should be done with a rubber suction bulb—*never* by mouth.
5. When mixing acid and water, always add acid to water; *never* add water to acid.
6. Any work involving toxic or flammable gases should be done under a fume hood. Lab workers should wear appropriate protective clothing when working with toxic or flammable gases.

Table 2
Chemical Safety Labels



The potential hazard of each chemical used in a water treatment laboratory should be stated on the chemical container. A good way to do this is to attach a label to the container. Labels such as the ones shown here can be read easily and draw attention immediately to the potential danger of the chemical. Each label is a different color. The color helps the label stand out and be easily noticed by lab personnel. Printed labels are available from many chemical suppliers.

It is a good practice to attach labels to chemicals as soon as they come into the lab. It is also a good practice to attach labels to any solutions made from chemicals that pose safety hazards.

Labelling chemicals (1) alerts lab personnel to the potential dangers of the chemicals they work with, and (2) serves as a warning for dishwashers and other nontechnical workers, who may not be aware of the dangers associated with many chemicals.

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(continued from page 1)
the home. Variations on the procedure can be used successfully if the meter is installed outside of the home.

The procedures for performing the hot-water thawing process are:

1. Check the electrical ground in the home. If electrical service is grounded to the plumbing system, a jumper wire must be installed to maintain the ground circuit from the plumbing system to the service line before the service line is disconnected.

2. Disconnect the consumer's service line from the meter. Use extreme caution wherever metal service lines are used—defective electrical equipment in the home can allow dangerously high electrical current to flow through the household plumbing system into the service line. After the line is disconnected, touching one hand to the service line and the other hand to the plumbing system could cause a fatal electric shock if the jumper wire (mentioned in procedure 1) has not been properly installed.

3. On the service pipe, install the valve-and-drain assembly (shown in Figure 3).

4. Insert a flexible tube through the compression fitting of the valve-and-drain assembly into the service line.

5. Push the flexible tube forward into the service line. If necessary, manipulate the tube to fit through any irregularities in the service line. Continue pushing the tube forward until it is stopped by the ice in the service line.

6. Connect a hand pump containing hot water to the end of the flexible tube. (*Note*: If a garden-spray air-pressure tank is used for the hand pump, the tank must either be new or never used before to prevent the possibility of contaminating the potable water supply.)

7. Have a bucket or other container ready to receive water that is discharged from the service line back through the drain side of the valve-and-drain assembly.

8. Pump hot water through the flexible tube while pushing the tube forward in the service line. Continue pushing the flexible tube forward (while pumping hot water into the tube) until all ice blocking the service line is melted. The drain in the valve-and-drain assembly will allow the hot water to drain back out of the service line into the bucket or container.

9. When water from the distribution main runs freely through the service line, begin pulling the flexible tube out of the service line. *Do not* pull the tube all the way out of the service line. Leave just enough flexible tube in the valve-and-drain assembly to stop water from flowing out of the compression fitting.

10. Shut off the valve on the valve-and-drain assembly.

11. Shut off water service to the home at the curb stop.

12. Remove the valve-and-drain assembly from the service line.

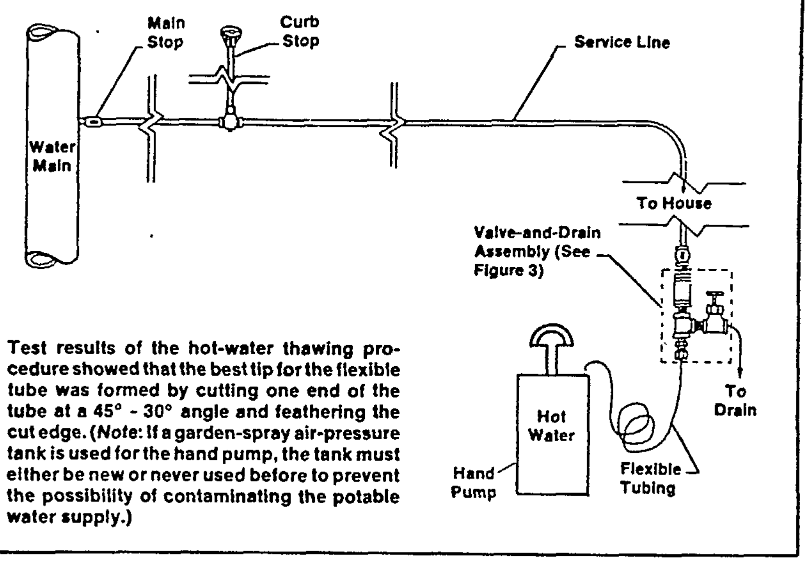
13. Turn on the water at the curb stop. Flush the service line by letting water run through the disconnected line into a basement drain (or suitable container) for at least 5 min.

14. Shut off the water at the curb stop and reconnect the service line.

15. Restore water service to the home.

Since the hot-water thawing process forms a cross connection with the potable water system, all equipment used in the process should be kept sanitary at all times. In addition, the hot water used to melt the ice in the service line must be of potable quality.

The hot water method of thawing frozen service lines has many advantages: (a) it is inexpensive; (b) in the hands of an experienced user, it is effective; (c) no special crews are required as with electrical thawing methods; (d) one operator can easily thaw a frozen service line; and (e) the method can be used for both plastic and metal service line installations. (*Note*: Tests have shown that the length of the service line does not seem to affect thawing action.)



Test results of the hot-water thawing procedure showed that the best tip for the flexible tube was formed by cutting one end of the tube at a 45° - 30° angle and feathering the cut edge. (*Note*: If a garden-spray air-pressure tank is used for the hand pump, the tank must either be new or never used before to prevent the possibility of contaminating the potable water supply.)

Figure 2 Diagram of the hot-water method for thawing frozen service lines.

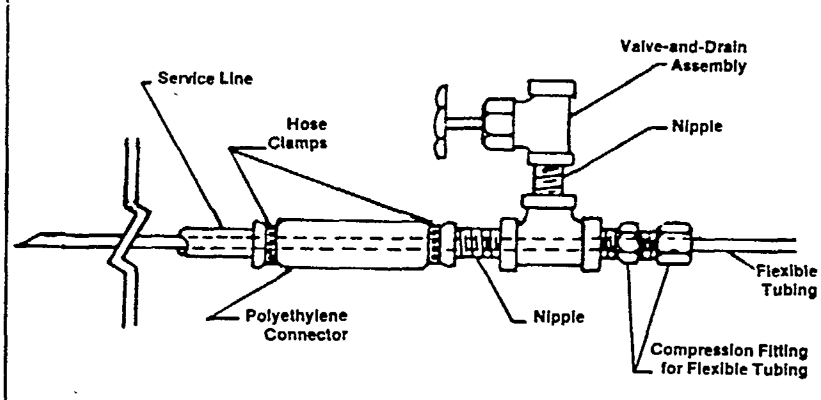


Figure 3 Close-up detail of the valve-and-drain assembly.

CAPCO JEN 0021422

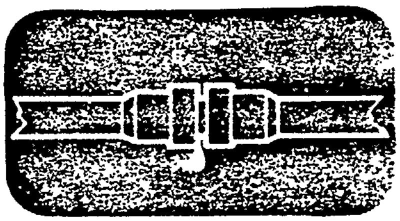
Keep Your Plant Running Like a 'Clean Machine'

D.H. Hart, Jr.
Water Division Chief
City of Aurora
Aurora, Colo.

In order for a water treatment plant to operate efficiently, the plant's pipes, valves, motors, and pumps must be in good working order. On a regular basis, each piece of equipment should be inspected for damage or improper operation. In addition, maintenance work should be performed on a regular basis both to keep plant equipment operating at top efficiency and to prevent major breakdowns that can result from a lack of maintenance. If inspection and maintenance procedures indicate that repairs are needed, repairs should be made immediately.

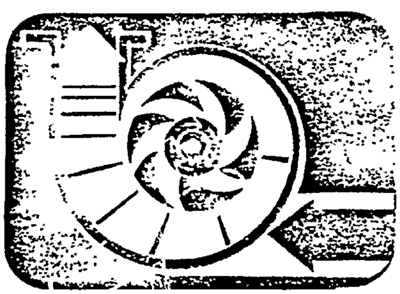
The inspection and maintenance procedures listed below are intended to help operators keep plant equipment in good condition and to prevent major repair problems from occurring. (*Note*: Inspection and maintenance of filters is also an important part of plant operations. For a list of inspection and maintenance procedures for filters, see the Feb. 1982 issue of *OpFlow*, page 6.)

Checklist for Plant Equipment Maintenance



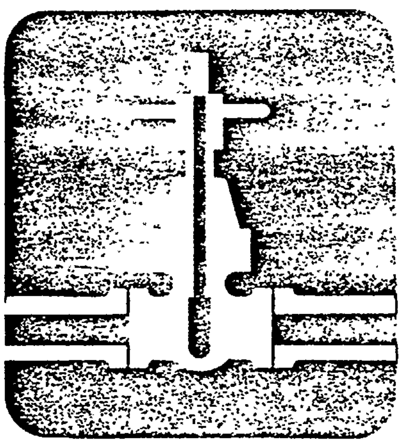
Pipes and Joints

1. Check for corrosion in pipes.
2. Where coatings are in poor condition, apply a compatible coating.
3. Inspect the joints between sections of pipe and repair any damaged or defective joints.



Electric Motors and Pumps

1. Be sure that motors are free of dirt, dust, and moisture.
2. Check for unusual conditions, such as noises, sluggish operation, unusual odors, sparks, dust under motor covers and couplings, knocking, and vibrations.
3. Check for proper alignment of couplings. Improper alignment can break the couplings and cause excessive wear to the pump and motor.
4. Check the packing on all pumps. Be sure the grease cups are full and loaded.
5. Check the accuracy of all meters and check the recorded hours of operation.
6. Check pumps during operation to be sure they are working properly.
7. Check the alignment of the pump and motor.
8. Check bearing clearances to see that they meet manufacturers' recommendations.
9. Lubricate motor bearings according to manufacturers' recommendations.
10. Clean any hardened grease from bearings.
11. Open bearing relief holes.
12. Check bearings with a stethoscope to detect any whining, grating, or other unusual noises.



Valves

1. Check valves, strainers, heaters, and ejectors for leaks.
2. Check the packing and seals of all valves and make repairs as needed.
3. Grease and oil valves as needed.
4. Be sure the operating mechanism on each valve is in good working order.

Record Keeping

1. Keep records for all inspection and maintenance activities performed on plant equipment. A card file provides a good means of keeping up-to-date records. When using a card file, keep a separate card (or cards) for each piece of equipment. On the card, record any problems experienced with the piece of equipment and include the names, addresses, and phone numbers of supply outlets where repair parts can be obtained.
2. When lubricating parts, record the type of lubricant used and the date of lubrication.
3. Depending on the type of equipment, record how often the piece of equipment is inspected—daily, monthly, or yearly.

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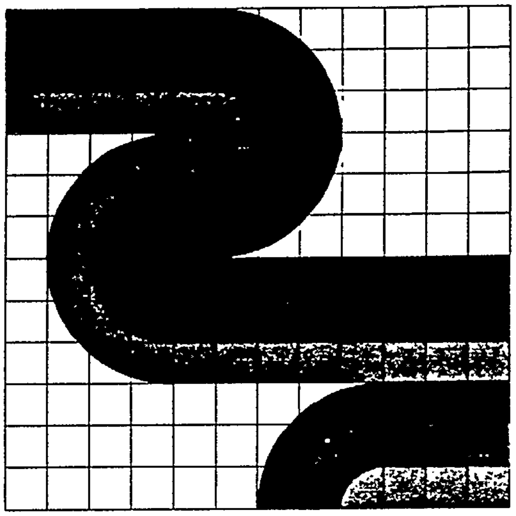
Attention:
Consultants
Managers
Operators



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Certification Corner Answers

1. a—2; b—9; c—5; d—6; e—1; f—7; g—4; h—8; i—3

2. Each millilitre of stock solution = a dosage of 10 mg/L in the 1-L sample. Therefore, 3 mL of stock solution = 30 mg/L dosage in the sample.
(700 gpm) × (60 min/hour) × (24 hr/day) = 1 008 000 gpd
(1 008 000 gpd) ÷ (1.0×10^6) = 1.008 mgd
(30 mg/L) × (8.34 lb/gal) × (1.008 mgd) = 252 lb/day
pounds of alum (rounded) = 250 lb/day

3. chlorine demand = (chlorine dosage) ÷ (lb H_2O treated per day)
lb H_2O treated per day = (500 gpm) × (8.34 lb/gal) × (1440 min/day)
= 6 004 800 lb H_2O/day
= 6.004×10^6 lb H_2O/day
chlorine demand = (11 lb Cl_2/day) ÷ (6.004×10^6 lb H_2O/day)
chlorine demand = 1.83 ppm

4. pounds = (grams) ÷ (455 grams per pound—*constant*)
= (227 g) ÷ (455 g/lb)
= 0.5 lb
227 g = 0.5 lb

5. °F to °C = (°F − 32) × 0.56
= (77°F − 32) × 0.56
= 45° × 0.56
= 25.2°C

6. a—alkalinity titrant, pH adjustment, sample preservative; b—hardness titrant; c—fluoride color indicator; d—indicator for iodometric dissolved-oxygen test; e—pH indicator

7. d

American Water Works Association
6666 W. Quincy Ave., Denver, CO 80235 (303) 794-7711

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