



Memo

Water and Pollution Control Department

515-239-5150

TO: Mayor and City Council

FROM: John Dunn, Director, Water and Pollution Control Department

DATE: November 12, 1010

SUBJECT: Materials for November 16 Workshop

For the November Council Workshop, the Water and Pollution Control Department will be providing an overview of two departmental programs currently under way. They include the backflow prevention program and the industrial pretreatment program. Attached for your advance preparations are one-page fact sheets about each of these programs and copies of the presentations that will be given next Tuesday evening.

There will be no specific council actions requested coming out of the workshop session. The Backflow Prevention Program is an established city program and is being offered solely as informational material on an activity that seldom requires council attention. The Non-Domestic Industrial Waste Pretreatment Program is also a long-established activity. It will ultimately require some ordinance revisions as a result of the new NPDES permit for the Water Pollution Control Facility, but those will likely not be brought forward for council consideration until next spring.

I am looking forward to the opportunity to share these programs with you next Tuesday evening.

JD/bas

Attachments



City of Ames, Iowa
Water and Pollution Control Department

**City Council Workshop
November 16, 2010**

BACKFLOW PREVENTION PROGRAM

One of the responsibilities of any water supplier is to protect its water system from inadvertent contamination. Connections, actual or potential, between the public water supply and a non-potable supply or substance constitute a potential source of contamination and may result in a serious public health hazard. There are numerous, well-documented cases where backflow has caused contamination of drinking water which resulted in serious illness or damage. A backflow prevention program is essential to keep our public water supply safe from contamination by outside sources.

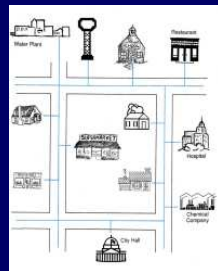
The backflow prevention program is a comprehensive plan covering all aspects of protecting the public water supply by preventing backflow. The program goes beyond simply designating where backflow prevention assemblies are required to be installed. It also addresses installation, testing, repair, and removal of assemblies, backflow incidents, and non-compliance.

When the backflow prevention ordinance was adopted in 1997, it was immediately implemented for all new construction. Implementation for existing locations has been following a gradual process. High-priority sites were identified and addressed first. After the high-priority sites were completed, we began addressing sites based on the size of the water meter. Sites with larger meters were addressed before sites with smaller water meters.

Annual testing of backflow prevention assemblies is a major part of our program. Backflow prevention assemblies are tested when they are installed and annually thereafter to ensure they will function properly if conditions arise where backflow could occur. Notices about the annual testing are sent to customers, who then hire a plumber, irrigation contractor, or fire sprinkler contractor to test the backflow prevention assembly.

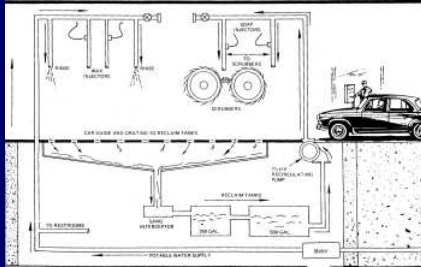
The program is a joint effort of the Water and Pollution Control Department and the Inspections Division. Both groups contribute to the success of the program.

As a water purveyor, we have the responsibility to provide our customers with water at the service connection that is safe under all foreseeable circumstances.

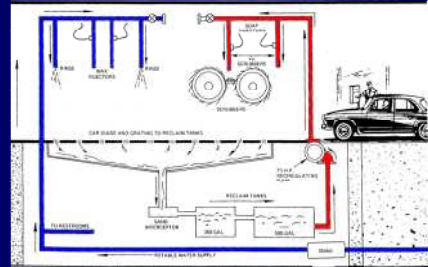


Age Group	Percentage of Respondents
18-24	~1%
25-34	~2%
35-44	~3%
45-54	~4%
55-64	~5%
65+	~6%

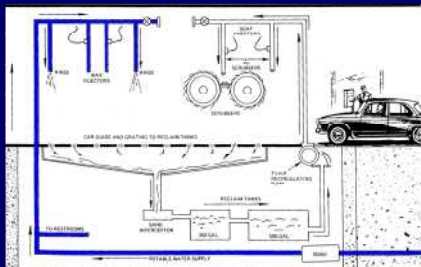
What is "Backflow?"



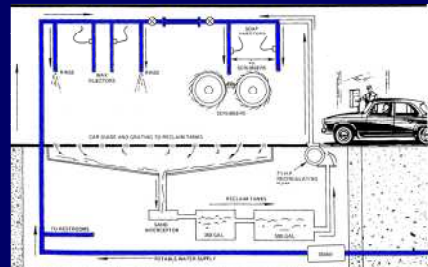
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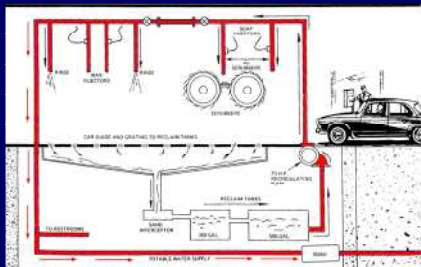
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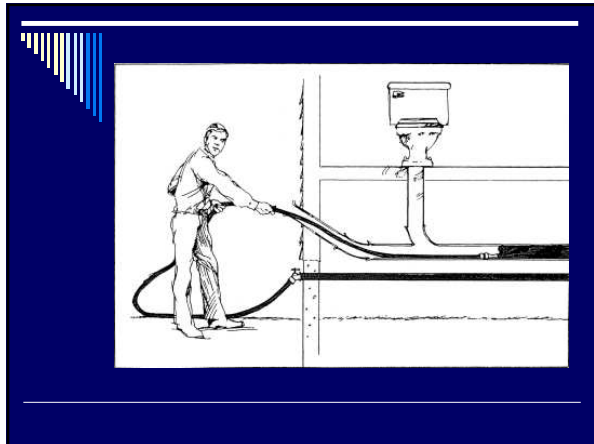


What is "Backflow?"



Where can backflow happen?

- Industrial facilities
- Commercial facilities
- In the home



How do we stop backflow?

- Isolation
 - The practice of preventing backflow by providing protection at the point of use
 - Protects the occupants and contents of the facility
- Containment
 - The practice of preventing backflow by providing protection at the water meter.
 - Protects the water distribution system

Containment / Isolation Differences

- Isolation
 - Backflow device at the point of use
 - Primarily an internal plumbing issue
 - Administered by Inspection Division
- Containment
 - Backflow device at the meter
 - Primarily a water distribution system issue
 - Administered by Water Meter Division

Containment & Isolation

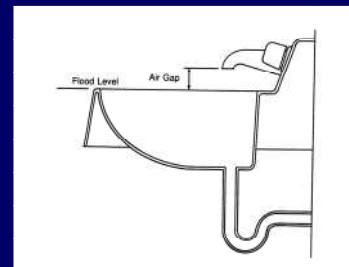
- Two-layer system of protecting public health
- State Plumbing Code requires containment "in addition to the applicable requirements [for isolation]."

641 IAC 25.5

Where is Isolation required?

- Isolation is required at any location water is used.
- Isolation is required on every point of use.
- The plumbing code identifies approved methods of isolation.

Example of Isolation



Example of Isolation



Where is Containment required?

- Containment is required on every water service that does not qualify for an exemption.

Conditions for Exemption (Must meet all)

- All water uses protected as per Chapter 6 of Uniform Plumbing Code
- No "auxiliary water supply"
- No solar heating system
- No "permanent swimming pools"
- No "commercial/ industrial fluid system"
- Facility accessible for inspection
- One (1) service line
- Less than 4 stories above grade
- Under the jurisdiction of the Ames Plumbing Code

"Permanent Swimming Pool" (Only "permanent" if meets all 4)

- Water is chemically treated
- Pool holds more than 1,000 gallons
- Contains a filtration system with a pump
- Rigid support walls/sides

Note that this definition does consider some above-ground, movable pools to be permanent.

Typical Containment Assembly



Implementation by Groups

- Group 1 – City Facilities
- Group 2 – High Priority Customers
- Group 3 – Customers with 2" or larger meters
- Group 4 – Customers with 1-1/2" meters
- Group 5 – Customers with 1" meters
- Group 6 – Commercial customers with 3/4" meters
- Group 7 – Commercial customers with 5/8" meters
- Group 8 – Residential customers

Group Status

- Group 1 – Completed
- Group 2 – Completed
- Group 3 – 104 of 116 completed
- Group 4 – 64 of 157 completed
- Group 5 – 228 of 333 completed
- Group 6 – 107 of 127 completed
- Group 7 – 57 of 566 completed
- Group 8 – No action yet

Division of Responsibilities

- Water Meter Division
 - Identify customers in each group
 - Send out background information and questionnaire
 - Follow up where there may be containment issues
 - Maintain records of all testing of backflow devices
 - Send notices to customers for annual testing

Division of Responsibilities

- Inspection Division
 - Issue permits for installation of backflow prevention assemblies
 - Inspect installation of all backflow prevention assemblies
 - Make determination as to what type of device is acceptable for isolation (point of use) protection
 - Follow up where containment will probably not be required

Installed Backflow Prevention Assemblies

- Containment – 791 Assemblies
 - 393 – Domestic water services
 - 398 – Fire sprinkler systems
- Isolation – 1315 Assemblies
 - 561 – Irrigation systems
 - 431 – Boilers
 - 323 – All other

Annual Testing

- Backflow prevention assemblies are tested annually to identify deficiencies in the assemblies before they fail to prevent backflow.
- Performed by testers registered by the Iowa Department of Public Health.
- Many testers are plumbers, irrigation technicians, and fire sprinkler technicians.

What can backflow cost?

\$300,000	Allegheny County, PA
\$1,000,000	Chattanooga, TN
\$3,000,000	Marshalltown, IA
\$13,000,000	Roanoke, VA
\$21,000,000	Hawthorne, NJ

What is the impact on people?

Illnesses	Deaths	Where
83		Worcester, MA
49		Clifton, NJ
18 paralyzed	2	Huskerville, NE
240	3	Cabool, MO

How much has to backflow to cause a problem?

How much?	Where
1-3 gallons, estimated	Hawthorne, NJ
3 gallons	Roanoke, VA

Does containment work?

At the Rilling Road Wastewater Plant in San Antonio, Texas, treated sewage was backpressured by a pump into the plant's water lines. The backflow prevention assembly installed for containment stopped the water mains from being contaminated. Containment worked.

We have had good results because

- We act as a resource for plumbers, irrigations contractors, and fire sprinkler contractors.
- We are listening to the customers to find out what their needs are.
- We work to find solutions that meet the customers needs and at the same time protect the quality of our water.

Backflow Prevention Program

Questions?



City of Ames, Iowa
Water and Pollution Control Department

**City Council Workshop
November 16, 2010**

Wastewater Pretreatment and Surcharge Programs

The City of Ames Water and Pollution Control Department administers two wastewater programs; namely, the Non-Domestic Waste Pretreatment Program and the High-Strength Wastewater Surcharge Program. These two programs are separate; however, many of the industries that are on the pretreatment program are also on the surcharge program.

Non-Domestic Waste Pretreatment Program

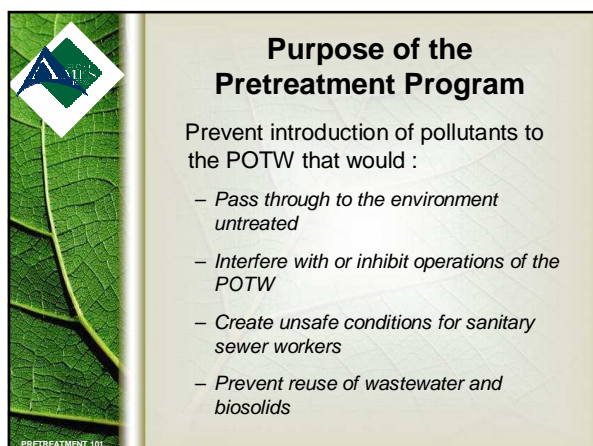
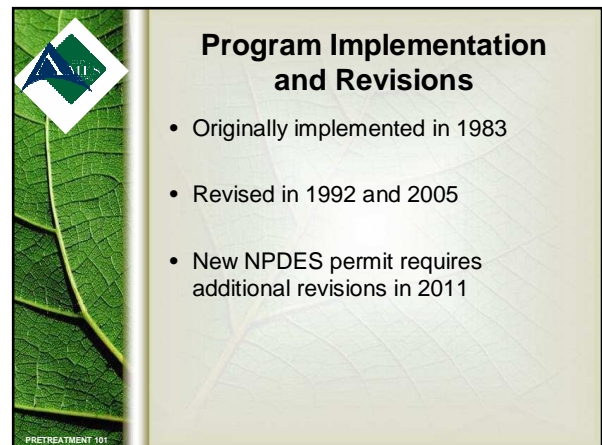
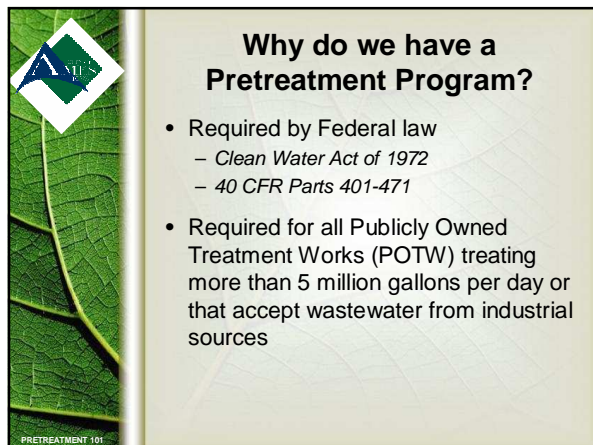
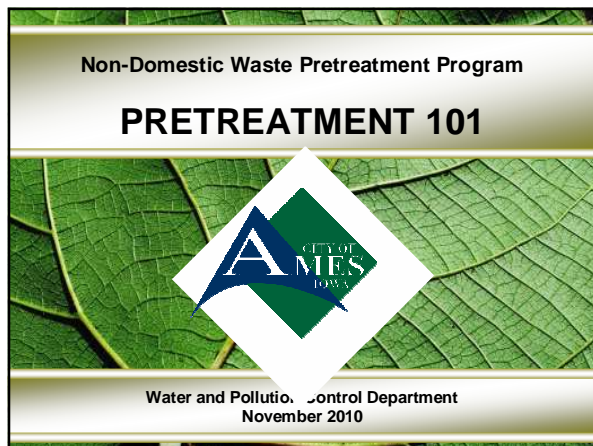
The City of Ames Water Pollution Control Facility is a Publicly Owned Treatment Works (POTW). Federal law requires the City of Ames to implement and maintain a Non-Domestic Waste Pretreatment Program. The City of Ames implemented its pretreatment program in 1983, with revisions in 1992 and 2005. The program goals are to prevent the discharge of pollutants to the POTW that would pass through the treatment process and pollute the receiving stream, interfere with or inhibit the POTW treatment processes, create unsafe work environments for sanitary sewer workers, and prevent the re-use of wastewater and biosolids.

Federal law requires that any facility that is listed as a categorical industry type or has the potential to negatively impact the POTW must be monitored under the program. In 2005, EPA implemented new Pretreatment Streamlining Rules that consists of required and optional program changes aimed at reducing the technical and financial burden for industries and the city without undermining the environmental objectives of the program. Some of the required changes are already implemented into the city's program. However, the *City Code* needs to be updated to officially adopt the new regulations and to incorporate some of the optional program revisions. The Ames Water Pollution Control Facility's new NPDES permit also requires that the Streamlining Rules be evaluated and necessary changes adopted by September 2011.

High-Strength Wastewater Surcharge Program

Industries on the surcharge program are often identified through the pretreatment program. The purpose of the surcharge program is to recoup the cost of treating high-strength wastewater while placing the burden of the additional treatment costs on the sources of the high-strength wastewater. This prevents all residents from paying higher wastewater fees to cover the additional treatment costs created by a few industries. Surcharge rates are published in the *City Code*.

A current issue with the surcharge program is dealing with negligible surcharge bills. Often, bills of less than a dollar per month have been billed to an industry. Once staff time is figured in to calculate, process, and mail a bill, the City ends up spending more to generate a bill than it receives in revenue. A program change that may be proposed in the near future is to implement a threshold bill which would allow staff to waive surcharge bills below a certain dollar amount. Another proposed change may be an update to the code definition of "normal domestic waste." Staff is currently collecting and analyzing samples from the collection system to verify that the definition we are using for normal domestic waste is actually what we are seeing from residential areas. Staff will provide Council more information on this in the near future.






What are “Domestic” and “Industrial” Wastewaters?

- Domestic Wastewater
 - Wastewaters typically seen from residential households
 - Compatible with WPC treatment processes
- Industrial Wastewater
 - Wastewater from industrial sources, higher in strength than domestic
 - Often requires “pretreatment” before discharge to the sanitary sewer

PRETREATMENT 101



How Pretreatment Works

- Industrial Waste Questionnaire
- Determine the need to monitor
 - Based on potential to impact the POTW or identified as a Categorical industry by federal law
- Pretreatment permit and contract for wastewater treatment
- Continued monitoring and inspections

PRETREATMENT 101



What’s in the Permit?

- Industry effluent “local limits”
- Wastewater monitoring requirements
 - What to monitor for and how often
- Compliance Schedules (If necessary)
 - Schedule the industry must follow in implementing changes needed to meet program requirements
- Valid for no more than five years

PRETREATMENT 101



Who do we monitor?

- Industries currently monitored:
 - City of Ames Landfill
 - Barilla America, Inc.
 - Ames-Story Landfill
 - Hach Company
 - Iowa State University (4 Facilities)
 - Central Campus
 - Environmental Health & Safety Services Building
 - College of Vet Med/Lloyd Vet. Med. Center
 - Vet Med Research Institute/LIDIF
 - Industrial Plating
 - National Animal Disease Center
 - National Veterinary Services Laboratories
 - Sauer Danfoss
 - Mary Greeley Medical Center

PRETREATMENT 101



What are “Local Limits”?

- Definition: the maximum amount of a given pollutant that an industry is allowed to discharge to the City’s sanitary sewer
- Local limits are based on:
 - NPDES permit limits for the Ames WPCF
 - Stream Standards for the S. Skunk River
 - WPCF process inhibition limits
 - Biosolids limits
 - Worker safety limits

PRETREATMENT 101



Enforcement Response

- If a facility violates its permit:
 - Issue a Notice of Violation (NOV)
 - resample if exceeded permit limits
 - If resample in violation, industry must investigate the cause of the problem
 - Too many NOV’s may result in:
 - Significant Non-Compliance and requires publishing notice in local paper
 - Issuance of a compliance schedule to correct problem


PRETREATMENT 101



Enforcement Response

- Additional enforcement actions:
 - *Issue Municipal Infraction*
 - *Fine of up to \$1,000 per violation per day*
 - *Termination of Service*
- By City ordinance, dischargers must reimburse the city for any costs incurred as a result of their discharges


PRETREATMENT 101



What is the Pretreatment Streamlining Rule?

- Reduces regulatory burden on Industries and the City
- Does not adversely affect environmental protection
- Required and optional program changes
- Ames WPCF new NPDES permit requires review and implementation of the rule by September 2011

PRETREATMENT 101




Pretreatment Streamlining Rule

- Burden of the program is reduce by:
 - *Allowing reduced sampling for pollutants not present*
 - *Allowing use of equivalent concentration limits in lieu of mass limits*
 - *Allowing use of general control mechanisms (permits) for similar industry groups*
 - *Reducing oversight based on an industry's contribution to the POTW*
 - *Reducing oversight by allowing additional classes of industries*

PRETREATMENT 101

Source: National Pretreatment Program Fact Sheet 1.0: Pretreatment Streamlining Rule




Pretreatment Streamlining Rule

- Other changes include:
 - *Increased flexibility in sampling techniques*
 - *Allows use of concentration-based standards as equivalent mass limits*
 - *Allows use of Best Management Practices as permit limits*
 - *Clarifies the definition of Significant Noncompliance*
 - *Other miscellaneous changes needed to maintain consistency with NPDES regulations or to correct errors*

PRETREATMENT 101

Source: National Pretreatment Program Fact Sheet 1.0: Pretreatment Streamlining Rule



What's Next?

- Ames WPCF new NPDES permit requires implementation by September 2011
- Review appropriate code changes by Spring 2011
- Present codes changes to Council for review and approval
- Submit program changes to IDNR for approval

PRETREATMENT 101



High Strength Wastewater Surcharge Program

High Strength Wastewater

- Definition: *compatible wastewaters with concentrations higher than that seen from typical residential households*
- Requires additional treatment
 - *Results in higher treatment costs*

SURCHARGE 101



Purpose of the Wastewater Surcharge Program

- Recover cost of treating high strength wastewater
 - *Recoups cost from actual sources*
- Keeps rates low and fair for all rate payers
 - *Prevents residents from paying higher rates to cover costs of treating high strength industry wastewaters*


SURCHARGE 101



Who Pays a Surcharge?

- Current facilities on program:
 - City of Ames Landfill
 - Barilla America, Inc.
 - Ames-Story Environmental Landfill
 - Hach Company
 - Iowa State University (*4 Facilities*)
 - Central Campus
 - Environmental Health & Safety Services Building
 - College of Vet Med/Lloyd Veterinary Medical Center
 - Vet Med Research Institute/LIDIF
 - National Animal Disease Center
 - National Veterinary Services Laboratory
 - Sauer-Danfoss
 - Mary Greeley Medical Center
- Not all actually have to pay surcharge


SURCHARGE 101



Surcharge Rates

- Rates are published in the City Code
 - based on the *cost/lb to treat*:
 - Chemical Oxygen Demand (COD)
 - Total Kjeldahl Nitrogen (TKN)
 - Total Suspended Solids (TSS)
- \$/lb rates converted to \$/100CF rates
 - Based on actual data from each facility
 - As a result, \$/100CF rates are different for each facility
- Rates recalculated every six months

SURCHARGE 101



Future Changes to the Surcharge Program

- Implementation of a “threshold bill”
 - *If a surcharge bill is below a certain dollar amount, no surcharge billed*
 - *Eliminates sending bills for negligible surcharge amounts (don't spend a dollar to collect 50 cents, just cut your losses!)*
- Update of definition of “Normal Domestic Waste”
 - *Testing going on now to define this*

SURCHARGE 101



Questions?

PRETREATMENT 101