

Drip System Maintenance

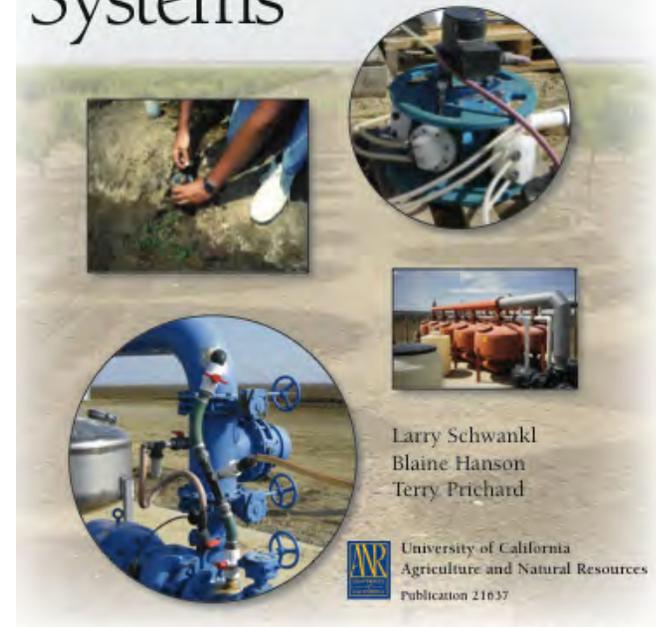
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Presentation available at: <http://ucanr.org/schwankl>

Maintenance of Microirrigation Systems:

Maintaining Microirrigation Systems



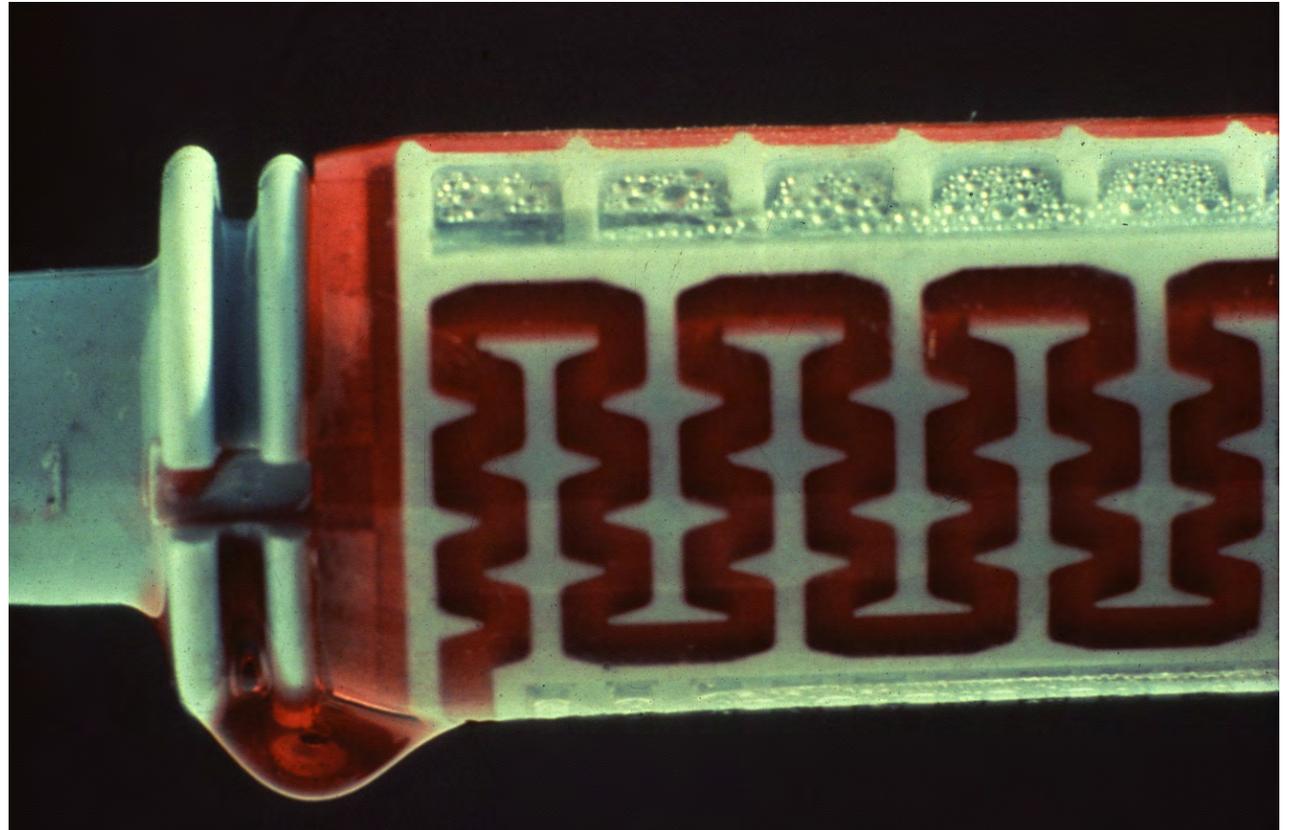
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Emitters:

Clogging is the greatest “threat” to emitters.



Clogging of Microirrigation Systems

Source: Physical Clogging - Particulates

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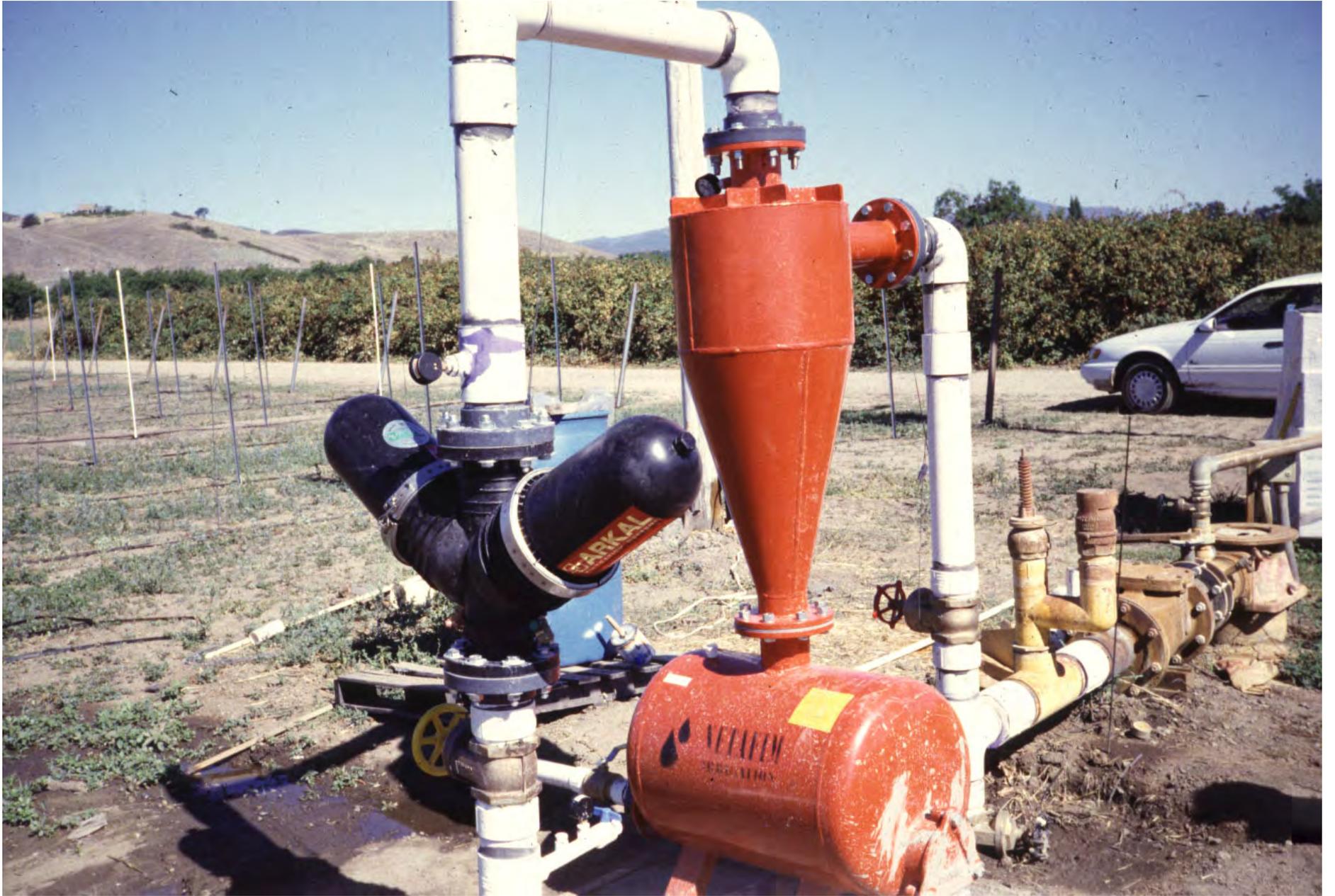
Solution: Filtration



Filters:

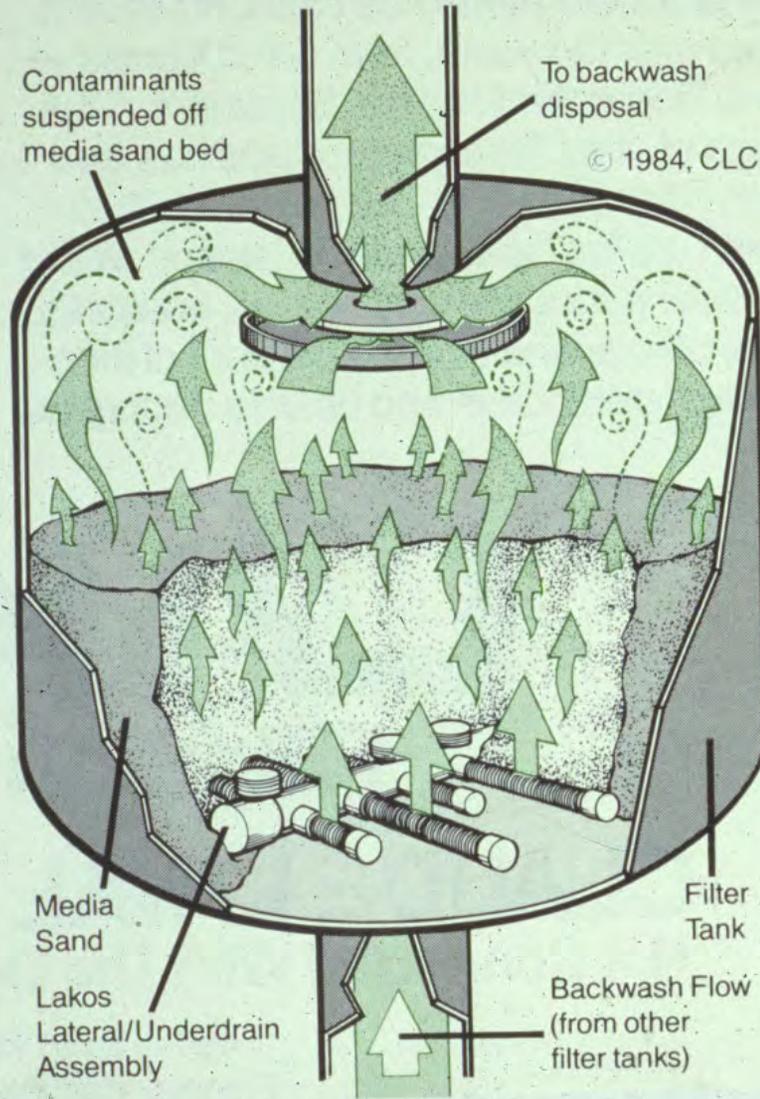
- **Screen, disk, and sand media filters are all available.**
- **They can all filter to the same degree**
BUT
they req. different frequency of cleaning.



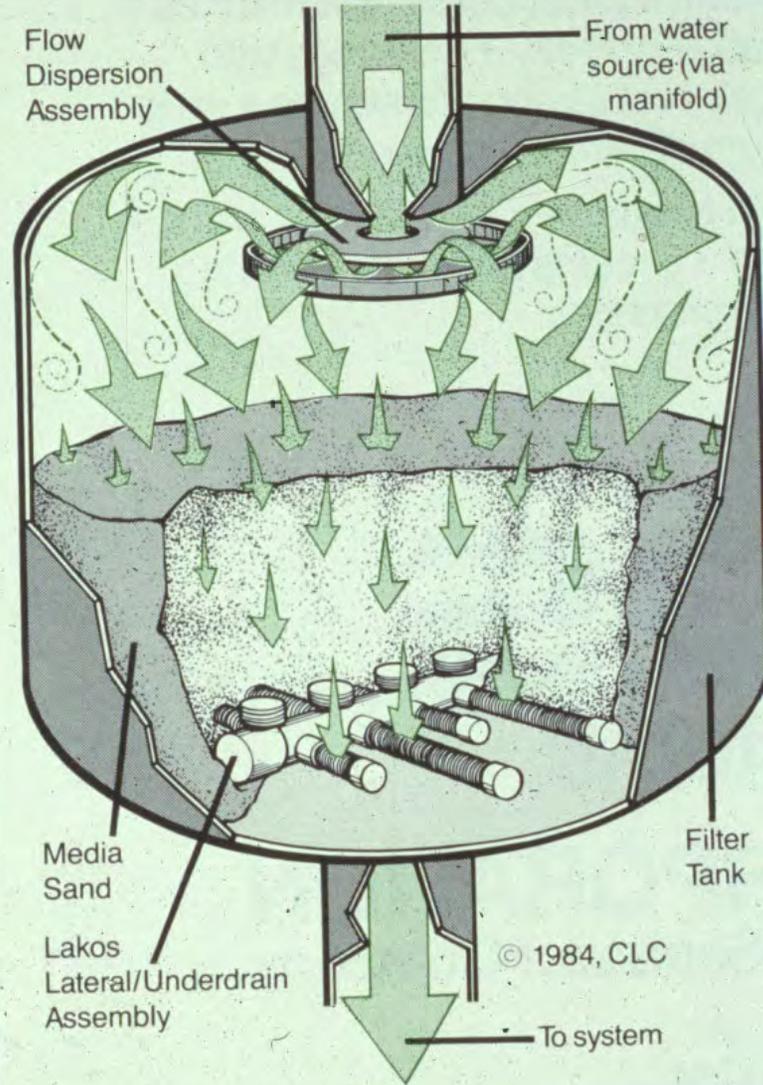


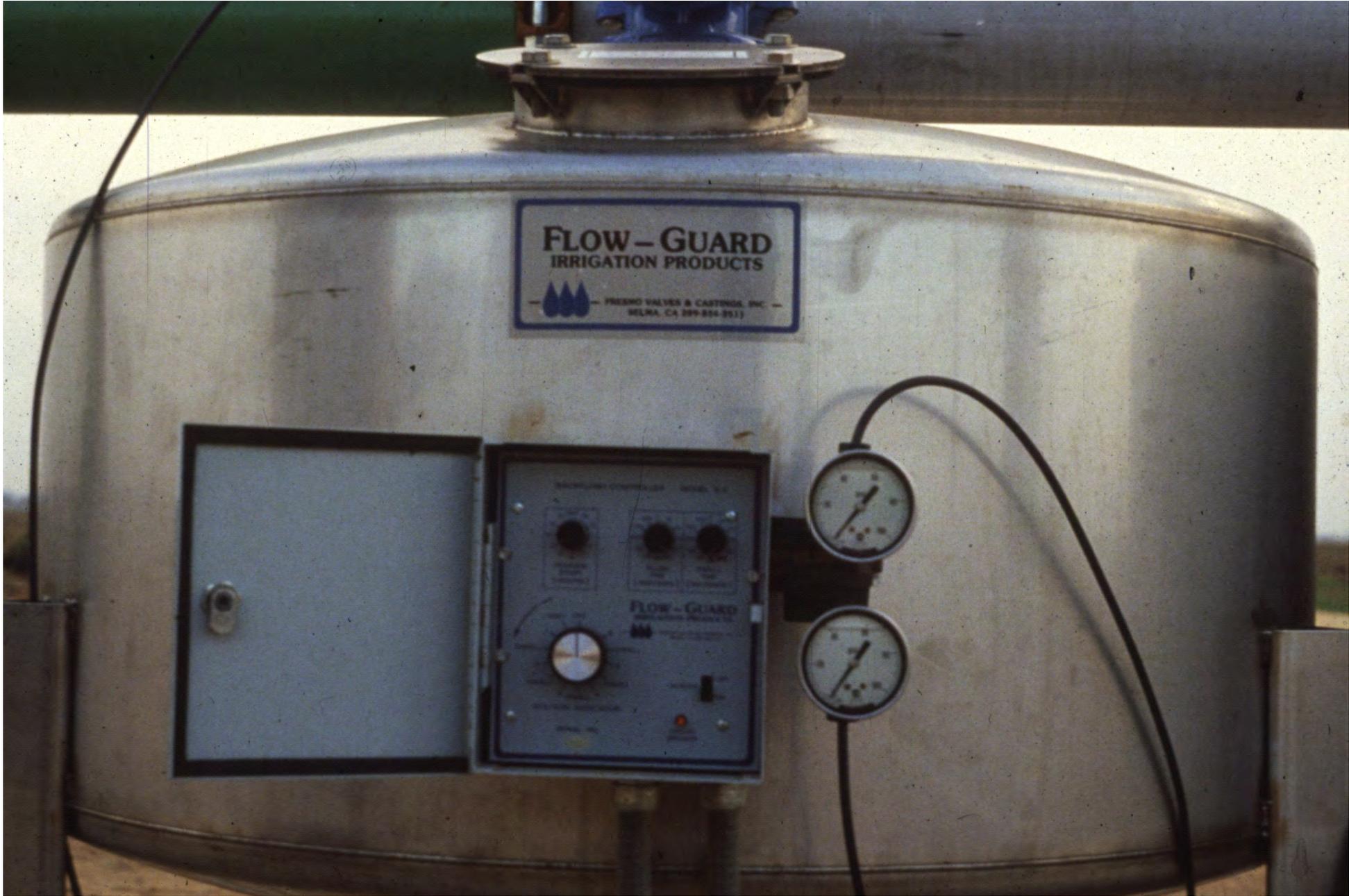


Backwash Process



Filtering Process





FLOW-GUARD
IRRIGATION PRODUCTS
PRESINO VALVES & CASTINGS, INC.
MELMA, CA 959-854-9511

FLOW-GUARD
IRRIGATION PRODUCTS

CONTROL PANEL

FLOW-GUARD

IRRIGATION PRODUCTS

Two analog pressure gauges with black dials and white faces, connected to the tank by black hoses.

Clogging of Microirrigation Systems

Source: Chemical Precipitates

- **Lime (calcium carbonate) and iron are the most common problems.**





Chemical Precipitate Clogging of Microirrigation Systems

Water quality levels of concern:

- **Calcium:** $\text{pH} > 7.5$ and 2.0 meq/l (120 ppm) of bicarbonate
- **Iron:** $\text{pH} > 4.0$ and 0.5 ppm iron

Clogging of Microirrigation Systems

Source: Lime

Solution: pH Control (Acidification)

+

filtration

Dealing with Iron Precipitation:

1. Precipitate iron in a pond / reservoir



Dealing with Iron Precipitation:

1. Precipitate iron in a pond / reservoir
2. **Chemicals (e.g. phosphonic acid, phosphonate) may keep iron in solution**

Clogging of Microirrigation Systems

Source: Biological Sources



Clogging of Microirrigation Systems

Source: Biological Sources

Solution: Filtration (usually media filters)

+

Biocide

Biological Clogging

Acid may deter
but not eliminate

biocide

chlorine copper

Chlorine

- Sources:
 - Liquid - sodium hypochlorite.
 - Solid - calcium hypochlorite.
 - Gas chlorine.



Chlorine:

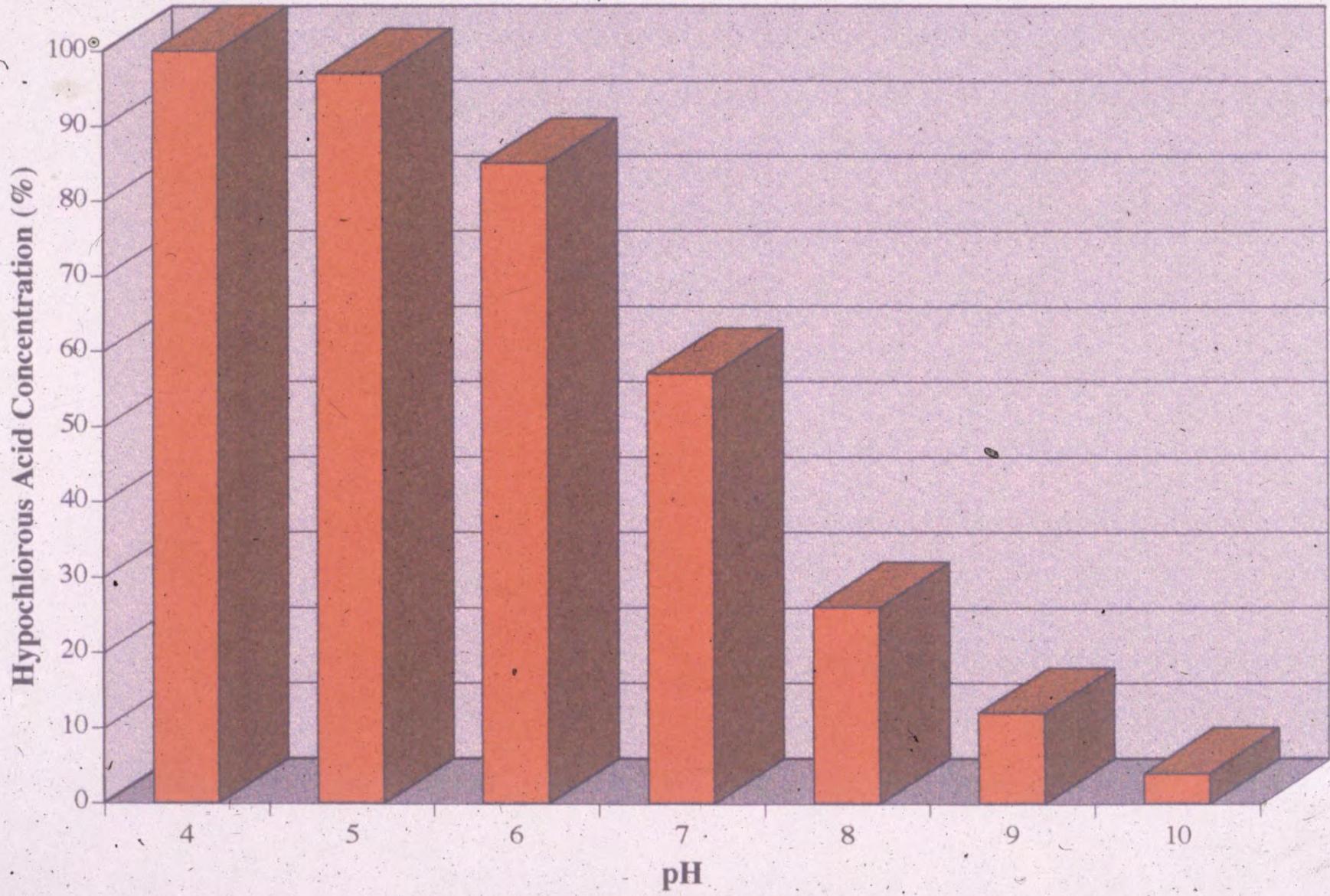
■ Sources:

- Liquid - sodium hypochlorite.
- Solid - calcium hypochlorite.
- Gas chlorine.

■ When add chlorine source to water:

- Forms hypochlorous acid + hypochlorite.
- Hypochlorous acid is more powerful biocide.
- If pH is lower (acidic), more hypochlorous acid is present - better biocide.

pH Effect on Hypochlorous Acid Concentration



Chlorine as a Biocide

	Free Chlorine
prevent growth	1 - 2 ppm
periodic injection	10 - 20
super chlorination (reclamation)	500 - 1000

Test for chlorine using a pool / spa test kit

Chlorine: Injection Rates

■ Sodium hypochlorite (liquid)

- Example: household bleach w/ 5.25% active chlorine.

$$\text{Chlorine injection rate (gal/hr)} = \frac{\text{System flow rate (gpm)} \times \text{Desired Cl Conc. (ppm)} \times 0.006}{\text{Strength of Cl soln (\%)}}$$

■ Calcium hypochlorite (solid)

- 65-70% available chlorine.
- 12.8 lbs. of calcium hypochlorite added to 100 gallons of water forms a 1% solution.
- Use above formula.

Leaks in Microirrigation Systems

Source: Rodents



Leaks in Microirrigation Systems

Source: Rodents

Solution: Get rid of them.



Flushing of microirrigation systems:

- Silts and clay particles pass through even the best filters.



Flushing

- Silts and clay particles pass through even the best filters.
- **Need to flush the system - mainlines, submains, and laterals (in that order).**



Flushing

- Silts and clay particles pass through even the best filters.
- Need to flush the system - mainlines, submains, and laterals (in that order).
 - Flush laterals by hand, use automatic flushing end caps, or manifold the ends together.





**Stay on Top of
Your Maintenance**



Questions?

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