

PERASAN®

Sanitation with Peracetic Acid
(PAA)

Enviro Tech Chemical Services, Inc.

Update: 11/13/03

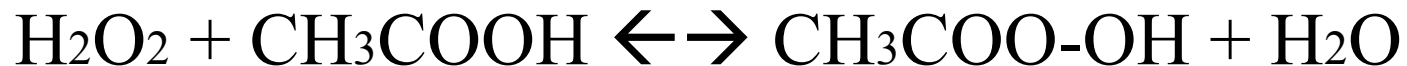
Presented by: Dr. Jon Howarth, Ph.D

Outline

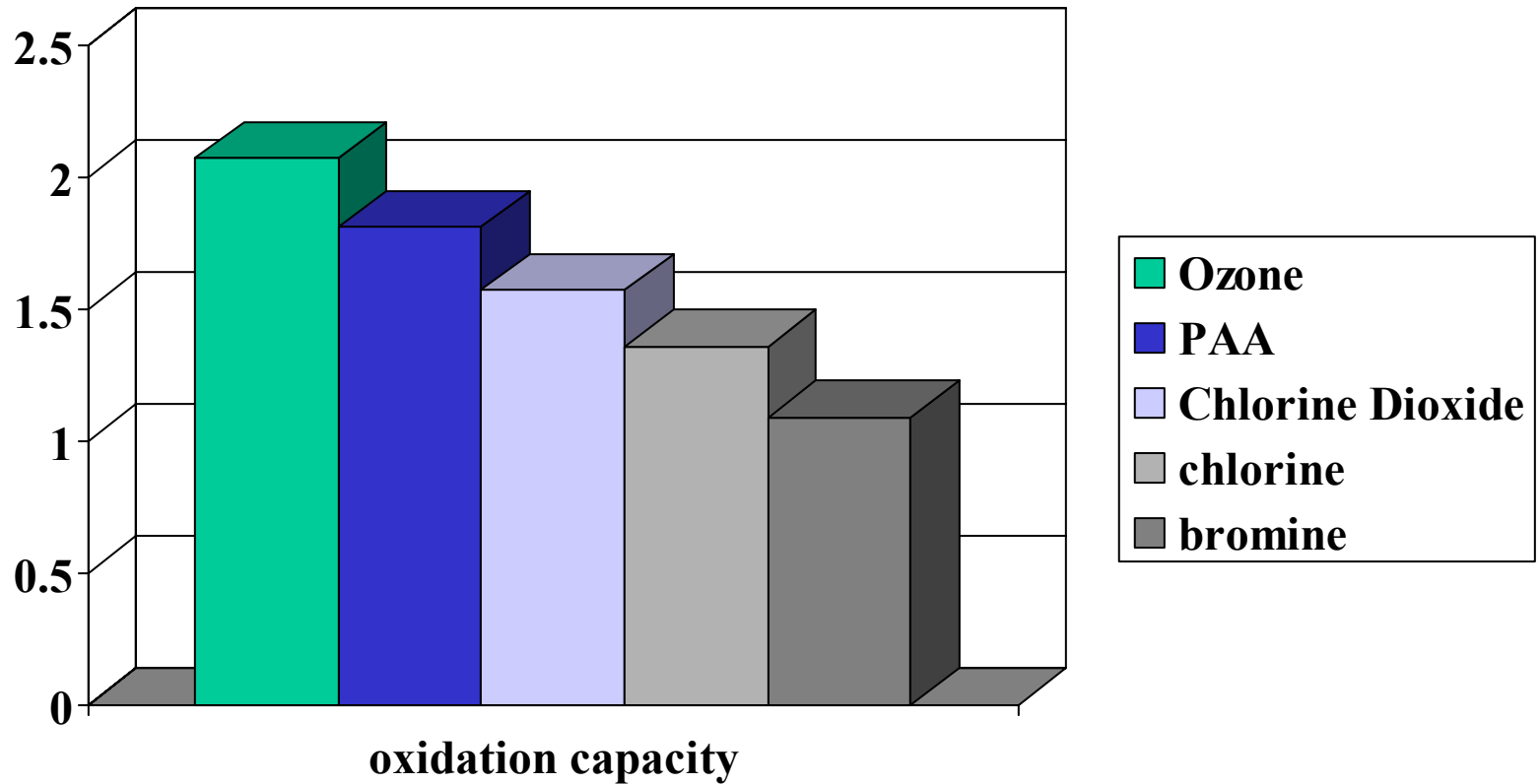
- Chemistry
- Microbiology – efficacy
- Regulatory Approvals
- Safety
- Handling – how to use
- Q & A

What Is PERASAN[®] 'A' (PAA)?

	<i>Activity</i>
• Peracetic acid (PAA)	5.6%
• Acetic acid	7.3%
• Hydrogen peroxide	26.5%
• Specific Gravity	1.12

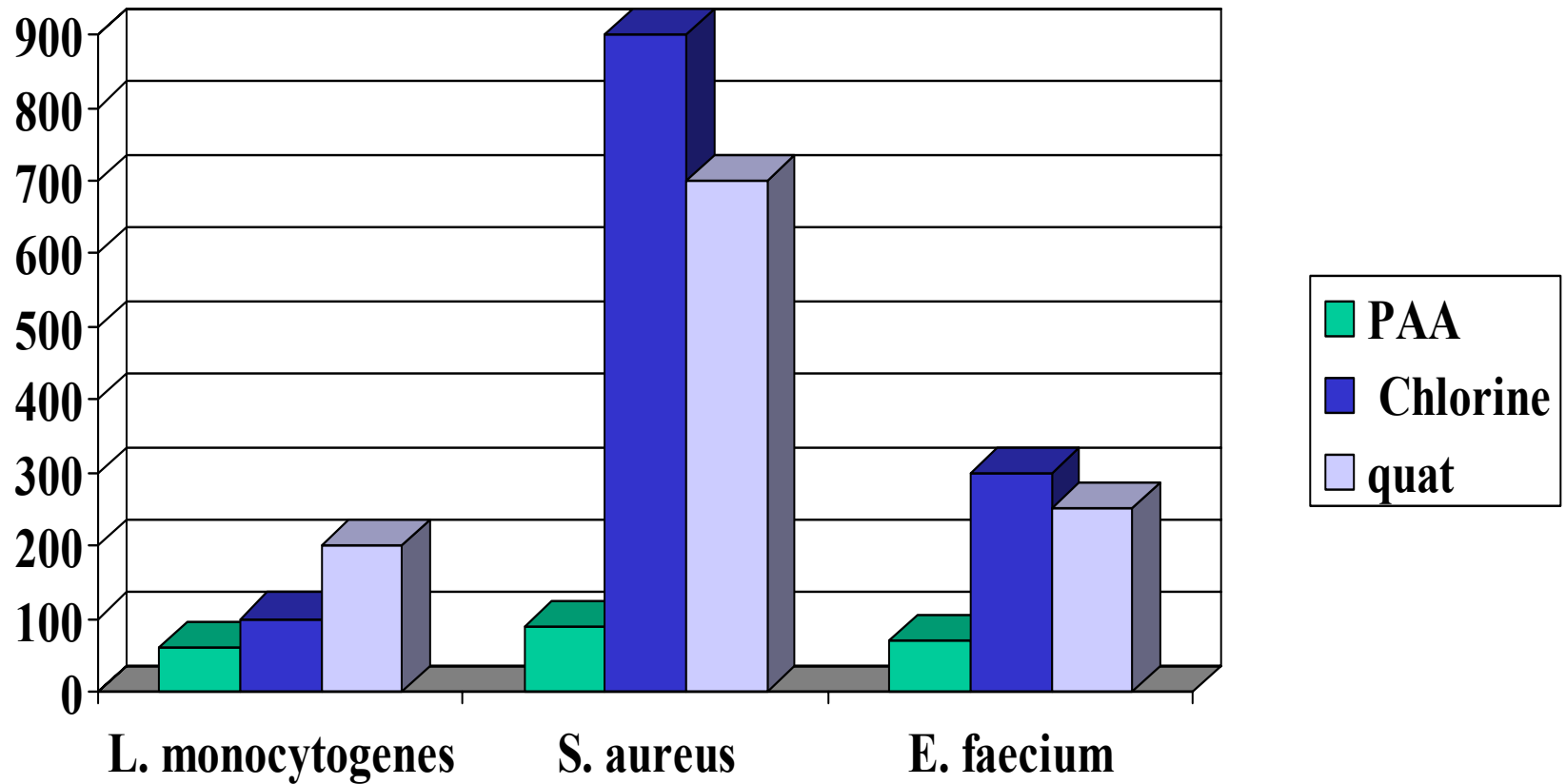


OXIDATION POTENTIAL OF PAA vs OTHER OXIDANTS (e⁻ VOLTS)



PAA Efficacy (Bacteria) In Presence of Hard Water and High Organic Load

ppm required for lethality in < five minutes



Conclusion

PAA is less affected by organic load (soil) than either chlorine or Quaternary (Quat) sanitizers.

PERASAN® 'A' Efficacy on Food Bacteria

80 ppm PAA (1 oz per 6 gal water)

<i>Species</i>	<i>log kill*</i>	<i>time (sec)</i>
Salmonella choleraesuis	>7.04	30
Listeria monocytogenes	>5.0	30
Staphylococcus aureus	>6.88	30
Escherichia coli	>6.94	30

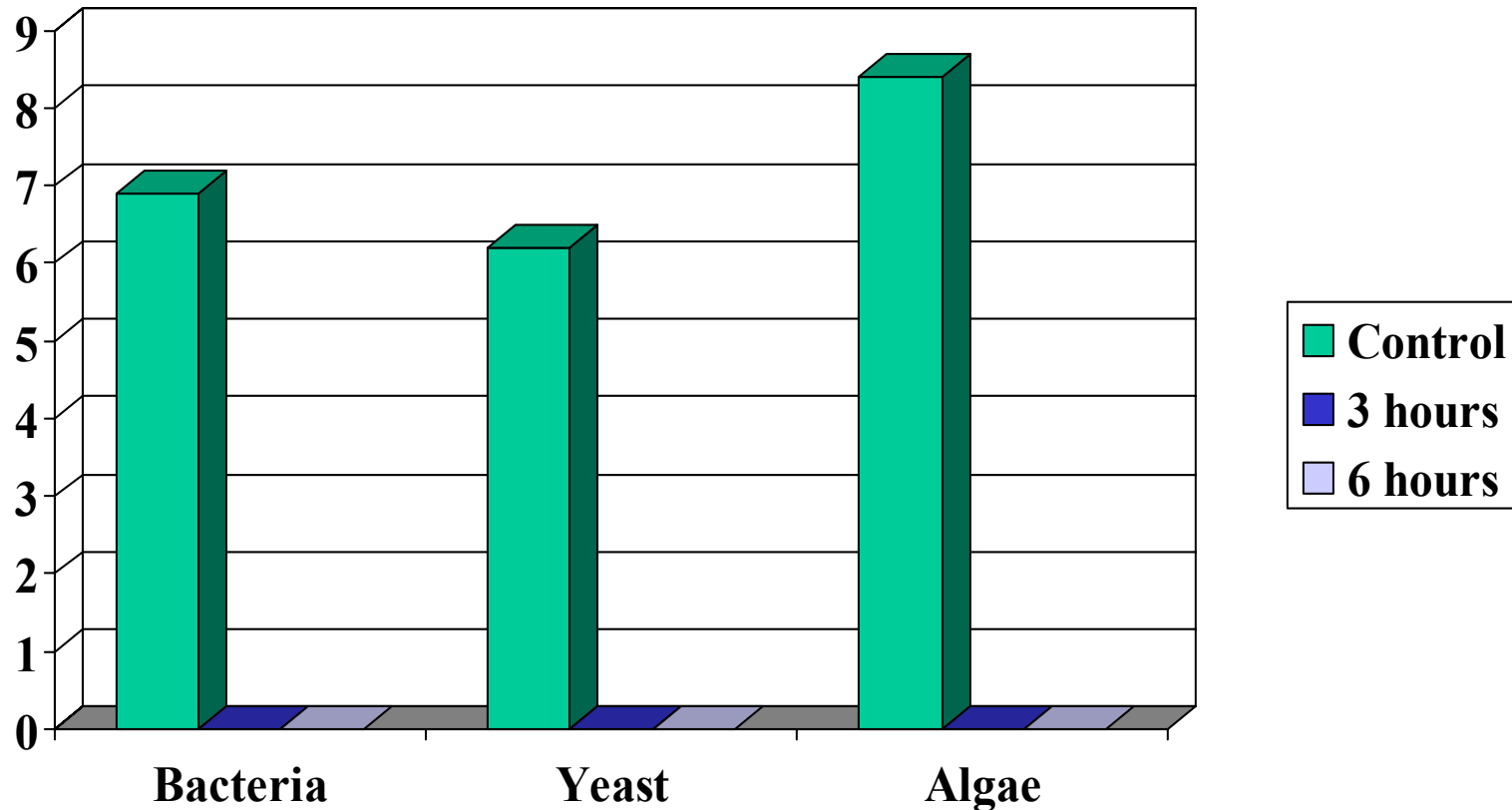
* All organisms pass the AOAC Germicidal and Detergent Sanitizing Action of Disinfectants Test

PERASAN® 'A' Efficacy
on Food Microorganisms
1000 ppm PAA at 46° C

<i>Species</i>	<i>Control*</i>	<i>Log kill*</i>	<i>time (sec)</i>
<i>Bacillus subtilis</i> (Spoilage bacteria)	6.2	>6.2	15
<i>Byssochlamys fulva</i> (Fungus)	5.1	>5.1	15
<i>Aspergillus niger</i> (Yeast)	5.1	> 5.1	15

* Log 10

PERASAN® 'A' SHOWS A COMPLETE
KILL AT 9 PPM, IN 3 HOURS
(LOG REMAINING)

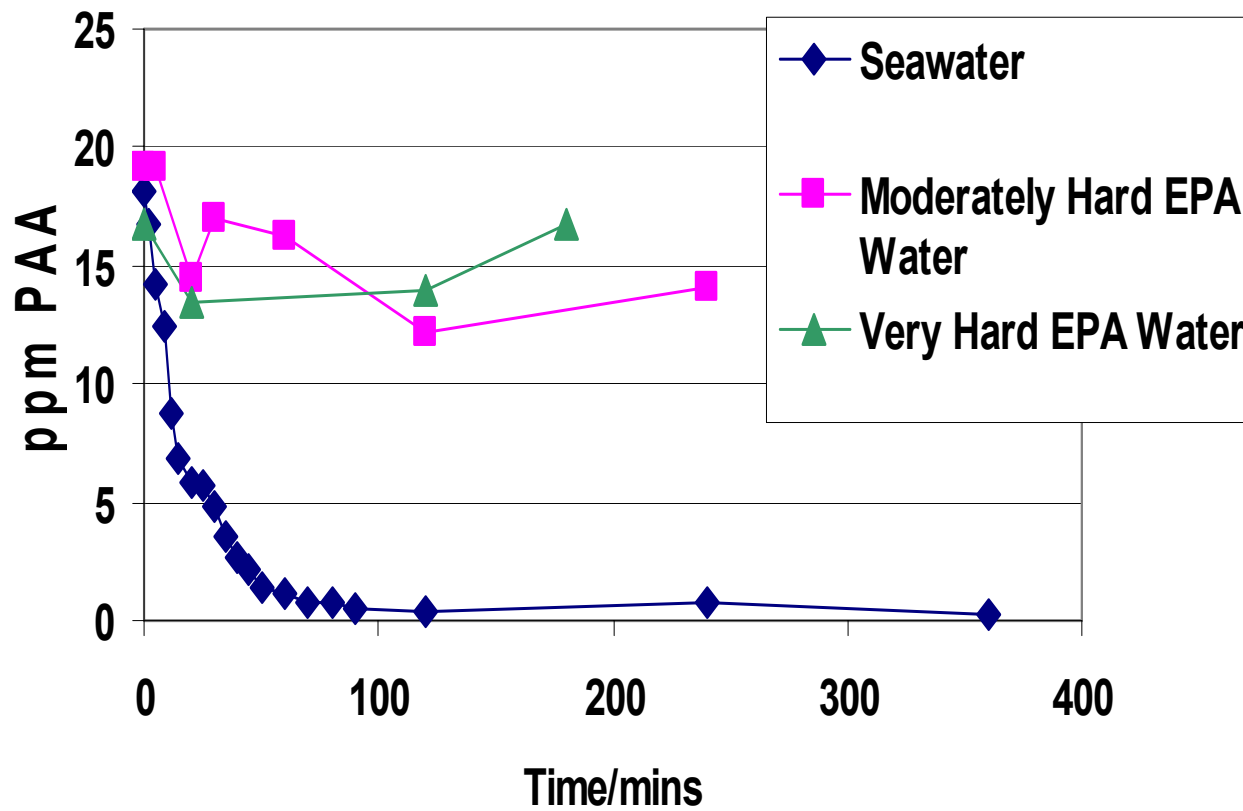


PERASAN® ‘A’ Sanitation of Food Processing Equipment

- Fruit & vegetable processing
- Beverage plants – high level sanitation of bottles
- Wineries, breweries
- Meat, poultry, seafood and egg plants

Used in High Pressure Kobe systems in all the above

Typical Dose in Kobe Pumps: 20-50 ppm
Short Term Decay Profile of PAA



Sanitation Properties

- Disperses/penetrates biofilms
- Kills bacteria, mold, fungus, and yeast
- Very fast acting
- Unaffected by hardness and soil
- Non-foaming
- Does not contribute taste, odor or color
- No rinse required

Sanitation Properties

- Does not form disinfection byproducts
- Breaks down into carbon dioxide and water
- Does not add conductivity (TDS)
- Non-corrosive to stainless steel, aluminum
- No RMP requirement
- Easily dispensed as a liquid
- Easy to test for

PAA Sanitation-Regulatory

- EPA approved as a pesticide
 - 40 CFR 152.25 (a) EPA #63838-1
- FDA approved for *direct* food contact
 - 21 CFR 173.315 (fruits, vegetables)
 - 21 CFR 173.370 (meat, poultry, seafood)
- FDA approved as sanitizer on food contact surfaces
 - 21 CFR 178.1010

PAA in/on Food

- Approved for direct fruit and vegetable contact without a final rinse.
 - ✓ Limit is 80 ppm as PAA for direct food contact
 - ✓ Limit is 500 ppm as equipment sanitizer (without a potable water rinse) (40 CFR 180.1197)
- Other uses include dip (wash) tanks, sprays, continuous belt sprays, cooling water, etc.

PERASAN® (PAA) Approvals

- National Organic Program
 - Approved Nov 17, 2000
- NSF approved for fruit and vegetable washing without a final rinse
 - Registration No. 122280
- Kosher approved including Passover
 - Pareve, Kashruth Certification

PERASAN® 'A' (PAA)

Aquatic Toxicity

Species	NOEC mg/l
Bluegill	0.47
Rainbow	0.82
Daphnia magna	0.56
Selanastrum	0.12

More Aquatic Toxicity Testing

Species		
Fathead Minnow	LC 50	0.99 ppm PAA
Selanastrum (algae)	EC 50	0.44 ppm PAA

Work on Daphnia, Bluegill, Rainbow trout, diatoms is currently underway

Safety and Handling

- **Storage:**
- PAA solutions should be kept in cool environments when possible.
- **Never** store a PAA drum outdoors in a **bright sunlight** without protecting the tops from direct sun. Sunlight will increase the temperature in the headspace of a drum, and the gas may expand faster than the venting membrane devices will allow.

Safety and Handling

- **Miscellaneous safety:**
- NEVER place or pour *concentrated* PAA solutions into any type of other holding device, such as ‘shot’ feeders, day tanks, or any other type of container, unless it is dedicated for PAA and is made of compatible materials.
- As a rule, add PAA solutions to water only.

Safety and Handling

- NEVER return PAA solutions back to the original container once it is removed. The slightest contamination may degrade the product remaining in the drum, or may set off a decomposition reaction, which evolves oxygen and heat.
- ALWAYS wear gloves, goggles or faceshield, and other appropriate chemical resistant gear when handling peroxyacetic acid products.

Questions & Answers

Thanks for Watching

CHECK US OUT AT:

enviro-tech.net