

Continuing Education for Water Operators



Mariana Islands
Water Operator Association

February 29, 2012
Pacific Islands Club, Saipan

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Today's Agenda

- About Continuing Education
- Current Events
 - A recent "outbreak"
- Main Events – Bottled Water
 - CNMI Regulations regarding bottled water
 - Reverse-Osmosis
 - Bottle Sanitation
- Association Announcements

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Continuing Education for Water Operators



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Is THIS training required?

➤ NO

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Why have continuing education?

- DEQ Regulations require certified operators to have 10 contact hours of continuing education per year (30 contact hours in 3 years) to maintain certification.
- DEQ is not required to offer training (and no longer offers training – no \$\$\$)
- Where would operators get training?

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Other training options

- Professional training provided by your employer (safety, pump maintenance, lab procedures, etc.)
- College classes
- Conferences or workshops by professional organizations or agencies
- Correspondence courses
- On-line opportunities

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NOT continuing education

- Meetings with DEQ or EPA
- Surveys or inspections by DEQ or EPA
- Reading journal articles or textbooks by yourself
- Googling water operator stuff on the internet

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When should training be offered?

- DEQ surveyed all certified operators
- Results
 - One 3 hour session every 3 months
 - In morning
 - On a Wednesday
- First session September 6, 2006

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2006 – 2008 (DEQ)

- September 6, 2006: Chlorination
- November 8, 2006: Using a Pump Curve
- February 7, 2007: Cross Connection
- May 9, 2007: Regulations - CCR, PNR
- August 8, 2007: Sizing Pressure Tanks
- November 26, 2007: PWS workshop
- February 20, 2008: Fluoridation
- May 2008: Process Controls (Robert Brokate)
- August 2008: Slow Sand Filters
- November 12, 2008: TCR and Control Valves

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2009 MIWOA

- March 25, 2009: Security and Filters
- May 13, 2009: Alt. Energy, CCR, Compliance
- August 5, 2009: Geology of Saipan, GWR
- October 9, 2009: GWR Workshop
- December 2, 2009: Valves, Spills, Walkerton

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2010 MIWOA

- February 3, 2010: Safety, Haz Materials
- May 5, 2010: BEH & DEQ, Cross Connections
- August 11, 2010: Waste Water Collection/Treatment
- November 3, 2010: Response to disease outbreak

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2011 MIWOA

- February 2011: Chemical Injection Pumps (HRWA)
- May 2011: Radiation, Radionuclide Rule
- July 2011: Utility Policies & Procedures; Standard Operating Procedures (HRWA)
- November 2011: Leak detection

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2012 MIWOA

- February 2012: Bottled Water; Reverse Osmosis; Bottle Sanitation

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THIS TRAINING IS FOR YOU!

We'll do what we can to make it
what YOU want it to be!

Mariana Islands
Water Operator Association

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Suggestions for training

- Possible topics for upcoming sessions:
 - Backflow prevention device testing
 - Rainwater
 - Local Water System
 - How Reverse Osmosis Works
 - Energy efficiency
 - Storm water and erosion control
 - Introduction to waste water treatment
 - Field trip
 - Cleaning and handling bottles
 - Leak detection

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Announcements

- Next session will be in May 2012
- Board member election
- Certificates now on-line

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Current Events

February 2012

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Haiti Cholera Update

1 year since outbreak

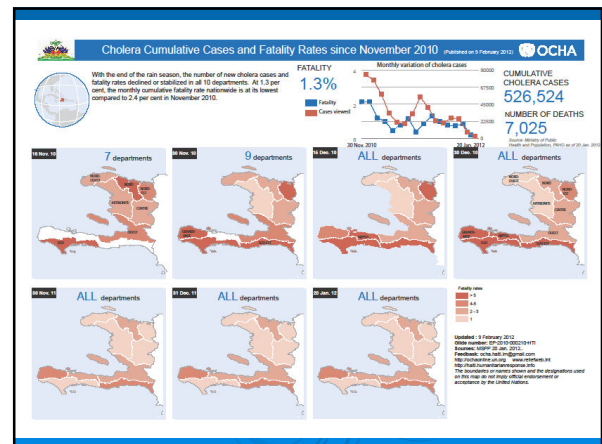


Distribution of oral rehydration salts

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- Outbreak first confirmed October 21, 2010
- Probably from UN workers from Asia
- Latest News
 - As of February 9, 2012: with the end of the rainy season, the number of new cases and fatality rates declined or stabilized in all 10 departments.

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- Water quality in camps deteriorates as free water distribution ends
- International Rescue Committee (IRC) ends its programs in 31 camps
- Slight decrease in the number of camp residents
 - Jul 2010 there were 1,500,000 displaced
 - Jan 2012 there were 515,000

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- Late January 2012 – Tinian clinic started seeing kids with upset stomach, diarrhea, and vomiting
- Enough people were sick that an “outbreak” was declared
- Gastroenteritis – norovirus suspected

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- Virus that causes acute gastroenteritis
- VERY communicable
- Spread through water and food, and by touching contaminated surfaces
- Believed to be the leading cause of food-borne disease in the US

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Recent Outbreaks

- Jan 31: NC reports increased cases
- Feb 1: sick
- Feb 1: a ch
- Feb 1: scho



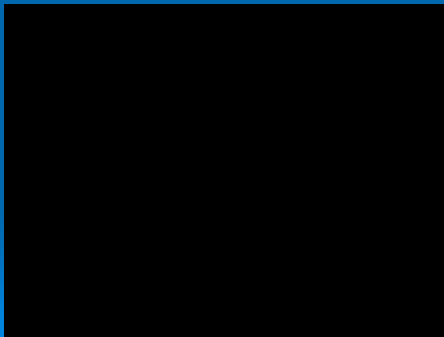
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Tinian

- Closed the school for one day – disinfected all surfaces
- Consulted with DEQ – water system a possible cause?
- DEQ sampled all systems the next day – all clean
- What was the cause?

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More About Norovirus



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Break - 5 minutes



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Main Event

Bottled Water in CNMI

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Bottled Water Companies

- | | |
|-------------------------------|---------------------------------|
| ➤ MP004: Saipan Ice | ➤ MP162: SWIP |
| ➤ MP027: JG Sablan | ➤ MP163: Marianas Ice and Water |
| ➤ MP054: Tinian Crystal Clear | ➤ MP165: Rota Crystal |
| ➤ MP063: The Water Company | ➤ MP166: Mountain Fresh |
| ➤ MP064: Diamond Water | ➤ MP173: Twinkle Bright |
| ➤ MP065: PLs Water | ➤ MP176: 3K Ice & Water |
| ➤ MP068: Tinian Ice & Water | ➤ MP177: Aqua Saipan |
| ➤ MP160: S.T.A.R. Marianas | |

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Regulated by

- DEQ
 - As Public Water Systems
 - Need certified operators
 - Sanitary Surveys
 - CCRs
 - Periodic Sampling
- BEH
 - As a food manufacturer
 - Food handlers certification
 - Sanitary Inspections
 - Water bottle labelling

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DEQ Regs specific to BWCs

- “Bottled water company” means a business that produces drinking water in bulk or bottles for retail or wholesale sale to the public. For the purposes of these regulations, bottled water companies are public water systems.

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Total Coliform Rule

- Minimum number of samples based on system configuration, not population
 - 2 routine samples monthly from each tap
 - 2 routine samples each month from the tank of each vehicle that hauls treated water
 - 1 routine sample each month from each retail bulk water storage tank that the company delivers water to

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Special Monitoring for Chemicals

- Have to monitor all source waters like other public water systems do (even if it is a consecutive system)

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Lead & Copper Rule

- Collect samples as if they were in the 101 to 500 system size category

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Disinfection By-Products

- Special locations selected for max residence time

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Lastly

- Certified operators required
- Must also comply with DPH regs and FDA regs

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BEH Regs

- Rules and Regulations regarding Water and Ice Manufacturing
 - Definitions
 - Sanitation
 - Trucks must be labeled "Potable Water Only"
 - Production and process controls
 - Containers
 - Sanitizing operations

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Sanitizing Operations

- Steam, or
- Hot water, or
- Chemical sanitizer
- Capped and inspected

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S.T.A.R. Marianas



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Saipan Ice & Water



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Saipan Ice & Water



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Saipan Ice & Water



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Saipan Ice & Water



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Saipan Ice & Water



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Labelling

- All packaged ice, primary containers, potable water tanker trucks, and retail bulk storage tanks shall have an identity label
 - Manufacturer's name
 - Address
 - Phone number
- Primary containers shall have labels saying when they were sealed

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FDA Food Labelling

- English
- Contents
- Quantity
- Manufacturer
- Lettering size

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Other Requirements

- Testing and monitoring per DEQ regs
- Food handlers certificate
- Sanitary permit
- Sanitary inspections

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Importation of Bottled Water

- All bottled water imported into CNMI must be manufactured by a member of the IBWA, ABWA or other professional association approved by Secretary of Public Health

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Questions about bottled water in CNMI?

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Break -10 minutes



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Reverse Osmosis

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Filtration

Conventional

- Uses a flocculant
- Passes through a supported media
 - Sand
 - Carbon
 - Garnet
 - Anthracite
- gravity

Membrane

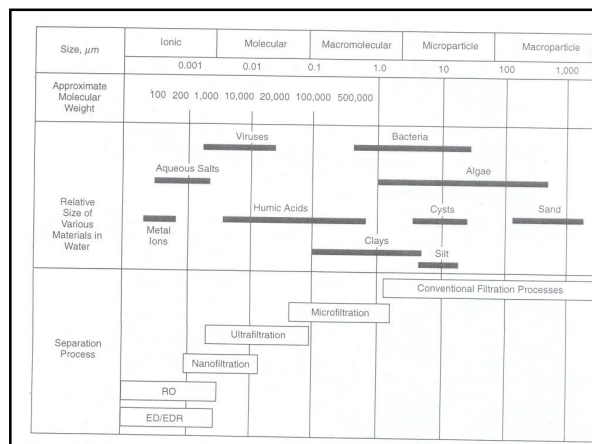
- No coagulant
- Passes through a porous membrane
- Medium to high pressure

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Membrane Filtration

- MF microfiltration
- UF ultrafiltration
- NF nanofiltration
- RO reverse osmosis

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RO Process

- Pre-treatment
- Membrane process
- Post-treatment

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Pretreatment

- Adding acid, antiscalant or both to prevent precipitation of salts (fouling) on the membrane
- 5 -1 15 um cartridge filter

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Post Treatment

- Aeration
- Degasification
- Disinfection
- Corrosion control

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Who in CNMI uses RO?



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Saipan Ice



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Saipan Ice



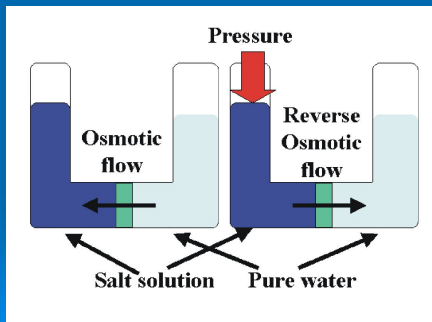
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Saipan Ice



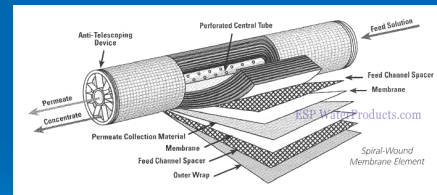
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Reverse Osmosis



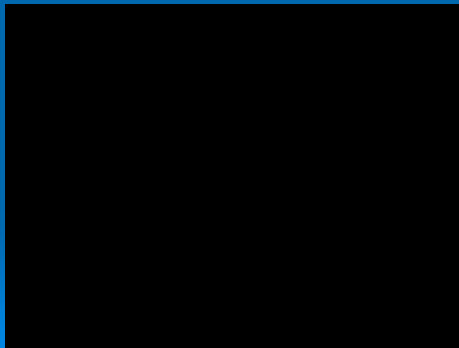
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Membrane



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Membranes



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Who else?



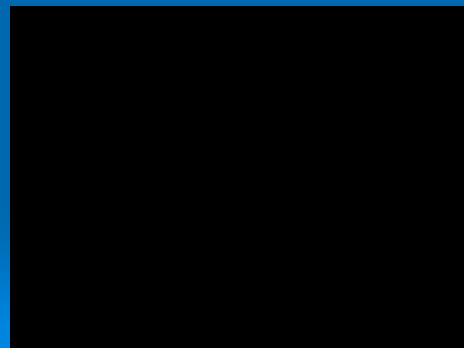
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Pressures Required

- Seawater
 - high pressure RO 800-1200 psi
- Brackish water
 - low-pressure RO 250-400 psi
- Fresh water
 - NF 75-150 psi
- HIGH ENERGY USE

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Energy Recovery



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Who else?



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Who else?



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Managaha



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Who else?



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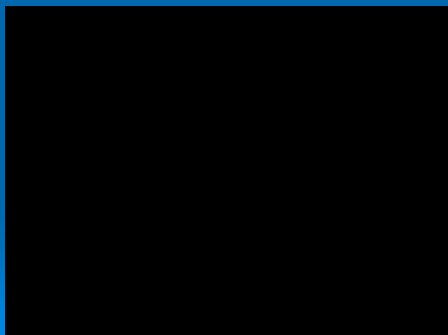
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Concentrate Disposal

- NOT INTO LAGOON!
- Typically – injections wells

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RO Process



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Break -10 minutes



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UF for microbial removal



Association Business

Lending Library
Board Elections

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Association Lending Library

- List is on the website
- Stan Goode donated lots of wastewater operator books

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Board Member Terms

- Chair: Derek Chambers – May 2013
- Vice chair: Bernard Keremius – May 2013
- Secretary: Mariano Iglecias – May 2014
- Treas: Cecilio Raiukiulipiy – May 2012

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