

Problem	Response	Support for Response or Remaining Questions
Municipal Piped Water in US has NTM	<ol style="list-style-type: none"> 1. NTM in Throughout Plumbing 2. NTM Resistant to Chlorine and Other Disinfectants 3. NTM Rapidly Adhere to Surface and Form Biofilms 	<p>doi: 10.1128/AEM.67.3.1225-1231.2001</p> <p>doi: 10.1128/aem.66.4.1702-1705.2000</p> <p>doi: 10.1099/jmm.0.000822</p> <p>doi.org/10.1111/jam.12272</p>
NTM Sources in Residences	<ol style="list-style-type: none"> 1. Water Heaters = Source of NTM Growth 2. Showerhead Aerosols = Source of NTM 3. Tap and Basin Drain Aerosols = Source of NTM 4. Refrigerator Water and Ice Machine 5. Flushing Toilets 6. Drinking Water (If Gastric Reflux) 	<p>Alternative = “Tankless”, but untested</p> <p>DOI: 10.2166/wh.2008.032</p> <p>Likely, but Untested</p> <p>NTM Survive in Ice</p> <p>Likely, but Untested</p> <p>doi: 10.1378/chest.06-1906</p>
NTM in Water	<ol style="list-style-type: none"> 1. Raise Water Heater Temperature to 130° F = Low NTM 2. Flush Unused Taps, Showers, Toilets 3. Filtration (0.2 micrometer pore size) = NTM Can’t Pass Pre-Filter to Collect Particulates 1-5 micrometers 4. Boiling = Kill Microorganisms 5. Spring Water = Low NTM 6. Well Water = Low NTM 7. “Sterile” and “Purified” Water have NTM = Avoid 8. Ultraviolet Irradiation = Kill NTM if Irradiated 9. Disinfection = Kill NTM 	<p>DOI: 10.3201/eid1703.101510</p> <p>In preparation</p> <p>doi: 10.1016/j.jhin.2011.12.018</p> <p>Limited Survey</p> <p>DOI: 10.3201/eid1703.101510</p> <p>Limited Survey</p> <p>Efficacy of Commercial Instruments Unknown</p> <p>Implementation and Maintenance Difficult</p>
NTM and OPPPs in Aerosols	<ol style="list-style-type: none"> 1. Showerhead Filter = NTM Can’t Pass 2. Clean and Disinfect Showerhead Weekly 	<p>Pore Diameter Less than 0.2 micrometers</p> <p>Detergent with 100 % and Submerge in Bleach 30 min</p>

	<p>3. Shower Mists in Bath</p>	<p>DOI: 10.2166/wh.2008.032 https://doi.org/10.1128/JCM.00899-13 Exhaust Fan or Window Showerhead with Large Holes (Drops, not Mist)</p>
	<p>4. Only Evaporative Humidifiers; Avoid Ultrasonic Humidifiers</p> <p>6. Avoid Spas or Hot Tubs = Generate NTM Aerosols</p>	<p>Generate NTM Aerosols doi: 10.1099/jmm.0.000822 DOI: 10.3201/eid0706.010623</p>
Disinfecting Equipment	<p>1. Vinegar as Disinfectant (pH 2.55)</p>	<p>NTM Acid-Tolerant: doi: 10.1111/j.1574-6968.2000.tb08871.x. Strain, Dose, Growth DOI: 10.1128/mBio.00013-14</p>
Nebulizers	<p>1. Water and Breathing = Contamination</p>	<p>Clean with Detergent and Disinfect Disinfect with Chemicals, Steam, Heat But Untested Alcohol Can't Penetrate NTM Wax Surface Peroxide Inactivated by NTM Surface Enzymes</p>
Filtration	<p>1. Filters Do Not All Have the Same Pore Diameter</p> <p>2. Granular Active Carbon (GAC) Filters Support NTM Growth</p>	<p>Pore Size Must Be Less than 0.2 micrometers doi: 10.1136/jcp.52.8.629a Never Use GAC-Filtered Water Unless Post-0.2 µm Filter doi: 10.1128/AEM.00930-06</p>
Gardening	<p>1. Garden Soil = NTM</p> <p>2. Potting Soil (purchased) = Lots of NTM</p>	<p>Garden with N95 Mask and Wet Soil = No Dust doi: 10.1128/AEM.00930-06 Garden with N95 Mask and Wet Potting Soil = No Dust doi: 10.1164/arrd.1980.122.1.89. Avoid Coastal Swamps and Estuaries</p>
Residence Location	<p>1. NTM are Estuarine</p>	
