

## **Glossary of Terms**

These are the terms that will be used throughout the whole 2014 Annual Water Quality Report for the Oshawa WSP, Whitby WSP, Ajax WSP, Beaverton WSP, Blackstock WSP, Bowmanville WSP, Cannington WSP, Greenbank WSP, Newcastle WSP, Orono WSP, Port Perry WSP, Sunderland WSP, Uxbridge WSP, Sun Valley WSP and Uxville WSP.

### **Adverse**

-specifically identified in Schedule 16 of Ontario Regulation 170/03.

### **Analyzer**

electronic instrument used in the water industry to determine the concentration of a known parameter, i.e. chlorine residual, turbidity etc.

### **Bacteria**

-a group of diverse and ubiquitous prokaryotic single-celled organisms.

### **Background Bacteria**

-a laboratory analysis of the bacteriological quality of the water, looks specifically at all types of colony forming units, including both pathogenic and non-pathogenic organisms.

### **Bq – (Becquerel)**

-is the international system unit of radioactivity, equal to one nuclear decay or other nuclear transformation per second. Results are expressed as Bq/L.

### **CFU – (Colony Forming Unit)**

is a laboratory term used to describe the quantitative presence of organisms in the sample in a given volume of sample filtered. Typical water samples are described as the number of CFU/100mL.

### **Contamination**

the introduction of materials which makes otherwise potable water unfit or less acceptable to use.

### **Continuous**

-represents continuous monitoring; readings are taken by an online analyzer.

### **Free Chlorine Residual**

-the amount of chlorine available for disinfection.

### **Disinfection**

-effective destruction by chemical or physical processes of pathogenic organisms capable of causing disease.

### **Disinfection By-product – (DPB)**

-is the formation of chemical compounds that result from the addition of chlorine to water containing organic compounds. Some DPBs include trihalomethanes (T.H.M.) and haloacetic acids (H.A.A.).

### **Distribution System**

-a water supply network consisting of; pipes, watermains, valves, pumping stations, storage tanks and reservoirs that delivers water from a treatment plant or well to consumers. A 'trunk' distribution system refers to the pumping stations, storage tanks and reservoirs within the system.

### **Drinking Water System – (DWS)**

-Ministry of the Environment reference for regulated Municipal Residential Drinking Water Systems.

### **Drinking Water Works Permit – (DWWP)**

-is a permit to establish or alter a drinking water system.

### **E. coli – (Escherichia coli)**

-E. coli is released in fecal matter that may be washed into water by rain, snowmelt, and other forms of precipitation. As such, E. coli is a type of fecal coliform, and its presence in water indicates contamination with sewage or animal wastes. It is an indicator of the possible presence of pathogenic bacteria.

### **Fecal Coliforms**

-fecal coliforms are a group of bacteria that are associated with human or animal wastes. Also known as thermotolerant coliforms, these bacteria usually live in human or animal intestinal tracts, and their presence in drinking water is a strong indication of recent sewage or animal waste contamination.

### **Fluoride**

-is added to drinking water as a means to decrease the incidence of tooth decay. Fluoride can also be naturally occurring in the environment.

### **Grab Samples**

-is a single sample taken at a specific moment in time, a snapshot of the conditions at the time the sample was retrieved.

### **Granular Activated Carbon – (GAC)**

-due to the porous nature the carbon provides a large surface area which adsorbs natural organic compounds. This aids in the removal of taste and odour compounds that may be present in the water.

## **Herbicide**

-organic chemical agent that is used to destroy or inhibit plant growth and can originate from a variety of sources including agriculture, urban run-off, and residential users.

## **HPC – (Heterotrophic Plate Count)**

-is a standard measure of bacteriological populations in water samples. HPC is a good measure of water treatment plant efficiency; an increase in HPC may suggest a problem with treatment.

## **Inorganic Contaminants**

-such as salts and metals which can be naturally occurring or result from urban storm water run-off, industrial or domestic wastewater discharged, oil and gas production, mining or agriculture.

## **Lead**

-is a metal not typically found in either surface water or groundwater supplies, it's presence in a water sample is primarily a result of lead being leached out of plumbing.

## **L/s – (Litres Per Second)**

-is a metric flow unit that describes the volume of water moved or transferred in a one second.

## **m<sup>3</sup>/d – (Cubic Metres Per Day)**

-flow measurement, 1m<sup>3</sup> = 1000litres or 220 imperial gallons.

## **MAC – (Maximum Allowable Concentration)**

-is the upper limit that a water sample can contain and still be considered safe for human consumption, typically M.A.C.'s are set at levels much lower than what is considered safe, when water samples show that the measured value is greater than fifty (50) percent of the M.A.C., operating authorities are directed to increase monitoring frequencies until the issue is resolved or detectable levels fall to less than the 50 percent threshold, M.A.C.'s are typically expressed as mg/L or ug/L.

## **Maximum Flow Rate**

-is the peak or highest flow recorded during a specific time period usually in a twenty-four (24) period.

## **MDWL – (Municipal Drinking Water Licence)**

-is the approvals framework for municipal residential drinking water systems requiring an owner to have a drinking water works permit, a permit to take water, an accepted operational plan, an accredited operating authority and a financial plan.

**MF – (Membrane Filtration)**

-is a quantitative test for the determination of specific microbiological contaminants.

**mg/L – (Milligram Per Litre)**

-this is a measure of the concentration of a parameter in water, sometimes referred to as parts per million (ppm).

**Microbiological Contamination**

-such as viruses, bacteria or protozoa which may come from water pollution control plants, septic systems, livestock operations or wildlife.

**Microorganism**

– a microscopic organism that cannot be seen without the aid of a microscope, including bacteria, protozoa, fungi, viruses and algae.

**MOECC – (Ministry of the Environment and Climate Change)**

-Provincial regulatory agency responsible for overseeing the water and wastewater industry in Ontario, primary functions include approval for new or expanding facilities, inspections and investigations.

**MOH – (Medical Officer of Health)**

-responsible for providing direction to the Operating Authority in instances of adverse water quality instances ensures adequate responses are being followed and has the authority issue boil water advisories and orders if necessary.

**MOL – (Ministry of Labour)**

-Provincial regulatory agency responsible to set, communicate and enforce workplace standards while encouraging greater workplace self-reliance. The Ministry analyzes treated water radionuclide samples.

**ND – (Non-Detectable)**

-typically refers to concentrations that are at or below minimum detection limits.

**NTU – (Nephelometric Turbidity Unit)**

-a measurement of the amount of turbidity in water, water is monitored at a variety of stages in the drinking water process to ensure effective treatment and compliance with provincial legislation.

**ODWQS – (Ontario Drinking Water Quality Standards)**

-is Ontario Regulation 169/03 under the Safe Drinking Water Act. The ODWQS lists the maximum allowable concentrations for bacteriological, organic and inorganic parameters.

## **Operating Authority**

-is the service provider responsible for the operation and maintenance of the drinking water system, in Durham Region this is the function of the Works Department.

## **OPG – (Ontario Power Generation)**

-Darlington and Pickering nuclear generating stations are located within the Region of Durham.

## **Organics**

-substance containing the element carbon, these can be naturally occurring or man-made and can include pesticides, solvents, and by products of chlorination.

## **Organic Chemical Contaminants**

-includes synthetic and volatile organic chemicals, which are by-products of industrial processes, petroleum production, gas stations, urban storm water and septic systems.

## **O. Reg. 170/03**

-Ontario Regulation 170/03.

## **PACl – (Polyaluminum chloride)**

-used to aid in coagulation

## **P/A – (Presence/Absence Test)**

-Durham Region uses the Presence-Absence method for routine monitoring of drinking water. This test is a very sensitive test for the detection of Total Coliforms and E. coli in treated water. The results by this technique are available in 24 hours.

## **Pesticides**

-can be grouped by chemical composition. Pesticides that contain chlorine tend to persist in the environment and may become concentrated in food chains causing health effects in animals such as predators at the top of food chains. Pesticides originate from a variety of sources including agriculture, urban storm water run-off and residential uses.

## **pH**

-index of hydrogen ion activity, pH is defined as the negative logarithm of hydrogen ion concentration in moles per litre. A solution of pH from 0-7 is acidic, 7 is neutral, and 7-14 is alkaline.

## **Potable Water**

-water fit for human consumption.

**ppb – (Parts Per Billion)**

-see definition for micrograms per litre.

**Radionuclide**

-can either be naturally occurring or be the result of oil and gas production, mining activities or nuclear power plant operations.

**Raw Water**

-surface water or groundwater that is available as a source of drinking water but has not received any treatment.

**SAC – (Spills Action Centre)**

-is the reporting centre operated by the Ministry of the Environment. All calls related to adverse water quality are reported to the SAC by either the laboratory performing the analysis or the operating authority.

**SCADA – (Supervisory Control and Data Acquisition)**

-computer system using coded signals over communication channels to provide control of remote equipment.

**TC – (Total Coliform)**

-is the coliform group of bacteria has been the most commonly used indicator of water quality. Total coliforms are a group of closely related bacteria that are usually free-living in the environment, but are also normally present in water contaminated with human and animal feces. With certain exceptions, they do not cause disease. Specifically, coliforms are used as a screen for fecal contamination as well as to determine the efficiency of treatment and the integrity of the water distribution system.

**Treated Water**

-water entering the distribution system after the treatment is complete.

**Turbidity**

-the measure of relative clarity of a liquid, the presence of suspended matter or impurities that interfere with the clarity of the water. The more total suspended solids in the water, the cloudier it seems and the higher the turbidity.

**ug/L – (Microgram Per Litre)**

-this is a measure of the concentration of a parameter in water, sometimes referred to as parts per billion (ppb).

**UV – (Ultraviolet Disinfection)**

-is a form of disinfection utilized in the water and wastewater industry, ultraviolet treatment uses the transmittance of ultraviolet irradiation to disrupt the genetic composition to inactivate waterborne pathogens.

**UVI – (Ultraviolet Intensity)**

-is measured in  $\text{mW}/\text{cm}^2$ . U.V. dose is the product of U.V.I. and exposure time in  $\text{mJ}/\text{cm}^2$ . U.V.I. is a factor in the effectiveness of the U.V. water treatment process.

**UVT – (Ultraviolet Transmittance)**

-is the percentage of U.V. light that passes through the water and represents the ability of a body of water to be effectively treated by a U.V. light source. The higher the percent transmittance, the easier it is for the U.V. to treat the water.

**WSS – (Water Supply System)**

-is typically a facility composed of a variety of treatment processes that collectively treat the source water to a degree of purity that enables it to be deemed fit for human consumption or potable.

**WSP – (Water Supply Plant)**

-is typically a facility composed of a variety of treatment processes that collectively treat the source water to a degree of purity that enables it to be deemed fit for human consumption or potable.

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