Effluent Quality Glossary

Wastewater treatment is the process of removing contaminants from wastewater, primarily from household sewage. Physical, chemical, and biological processes are used to remove contaminants and produce treated wastewater (or treated effluent) that is safer for the environment.

The following contaminants form part of the environmental licence conditions for Port Macquarie-Hastings Council's wastewater treatment plants. A brief explanation is provided for each.

BOD (Biochemical Oxygen Demand) – mg/L

This is a parameter used to quantify the risk of causing pollution from organic wastes. BOD is a measure, in mg/l, of the amount of oxygen needed by micro-organisms to break down the organic matter. In essence it is a measure of the amount of organic material in the water. Raw sewage typically contains about 350 mg/L BOD while treated sewage should be less than 30 mg/L.

Total Nitrogen, Ammonia and Nitrates – mg/L

Ammonia (NH_4) and Nitrates (NO_3) are nutrients that are found in raw sewage. Nitrogen is found in raw sewage largely in the form of Ammonia from human waste, if left untreated and discharged to the environment it can lead to algae blooms and fish kills. Therefore, the removal of these nutrients has become an everyday requirement in the treatment of **sewage** and other wastewaters.

Total Nitrogen removal involves the conversion of Ammonia to Nitrates termed Nitrification, followed by the conversion of NO_3 to Nitrogen (N) and Oxygen (O_2) gas which is given off in the atmosphere, termed Denitrification.

Total Phosphorous – mg/L

Phosphorous is a nutrient that contributes to the same problems in the environment as Nitrogen (described above) if not treated to appropriate levels. Phosphorous is found in sewage largely from human waste and detergents.

Total Suspended Solids – mg/L

Total suspended solids are solid materials, including organic and inorganic that are suspended in the water. It is measured as the dry weight of particles trapped by a filter when the water is passed through it. High levels of suspended solids can cause harm to aquatic life.

Thermotolerant Coliforms – cfu/100mL

Thermotolerant coliforms are a microbial indicator of faecal contamination in the treated effluent from the sewage treatment plants. A high number of thermotolerant coliforms in water can indicate the presence of pathogens (disease causing microorganisms).

pH

pH is a measure of how acidic (less than 7) or basic (higher than 7) the effluent is, with a pH of 7 being neutral. A pH in effluent discharged to the environment that is too high or too low can be detrimental to aquatic life. pH is measured on a scale of 0 -14.

Oil and Grease

Oil and Grease occurs in sewage largely from the discharge from restaurants and other commercial kitchens. Fats, Oils and Grease are prohibited from being discharged into the sewerage system and businesses that produce them are required to install a grease trap to minimise their discharge.

Units of Measurement

mg/L: Milligrams per litre is the mass of a chemical or contaminate per unit volume of water. It is expressed as the number of milligrams of that contaminate in each litre of the treated effluent discharged.

cfu/100mL: A cfu stands for 'Colony Forming Units' and refers to the number of viable bacterial cells in a sample per unit volume. For example. 50 cfu/100mL means 50 Colony Forming Units per 100mL of treated effluent.