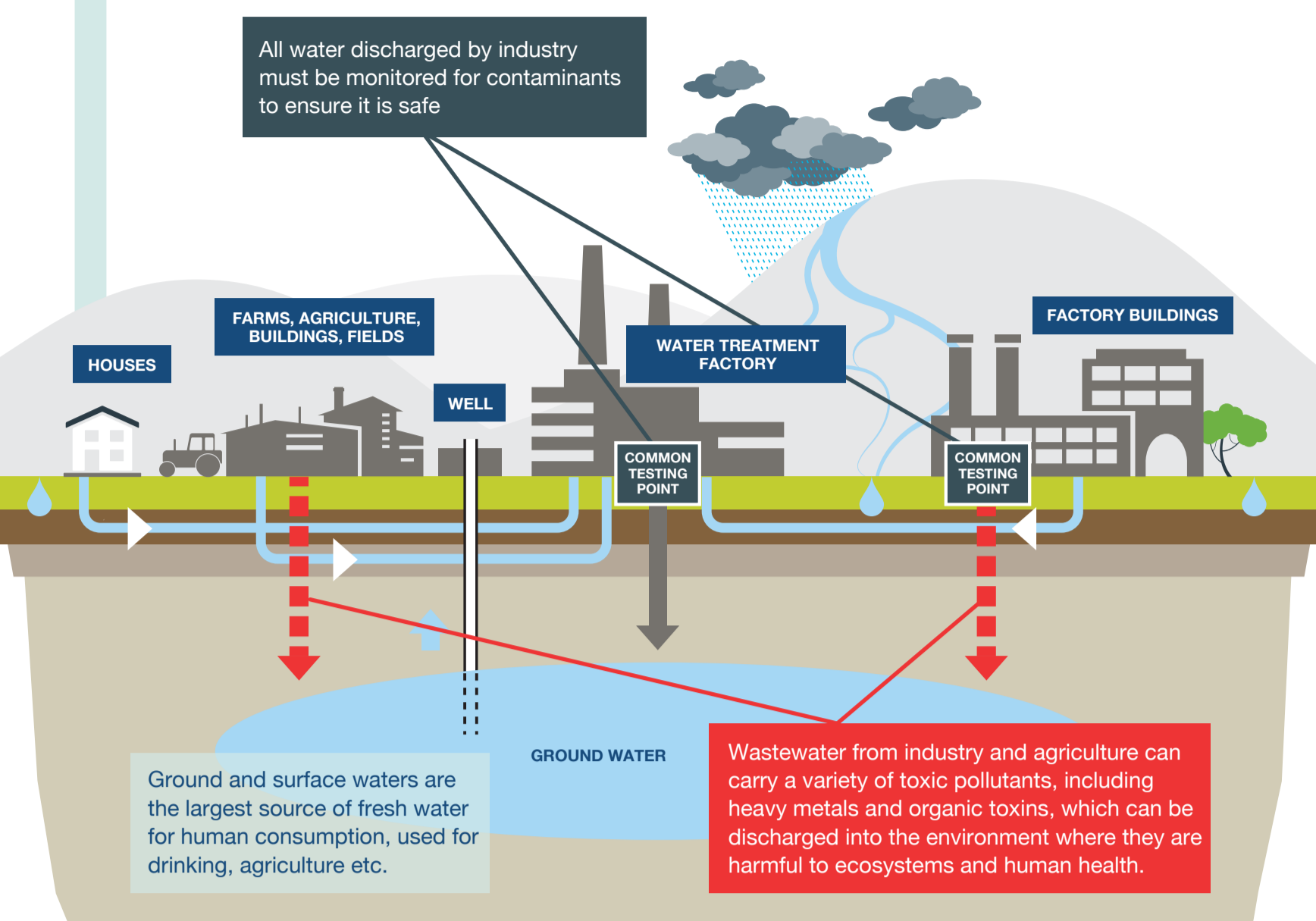


TESTING TIMES

Fresh water has never been more precious than it is today. But how can we keep up with demand? Fortunately, water treatment factories can turn waste products into potable water... as long as they are testing the final product to ensure it meets regulatory standards. Unfortunately, this is not always as easy as it sounds.

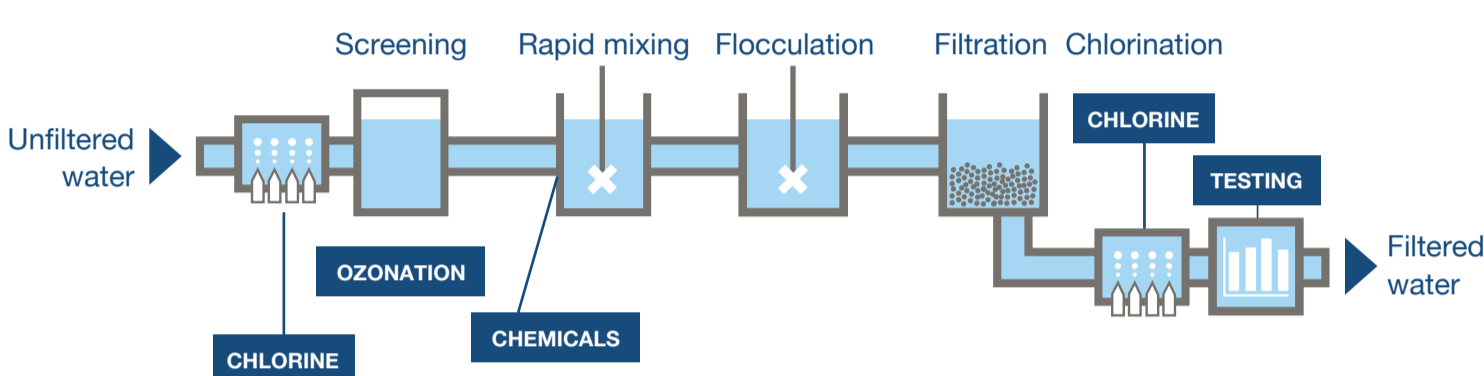
1 TURNING WASTE INTO WATER

Fresh water makes up only 3% of the water on the Earth, so it's important that we make effective use of all the sources available – this includes recycling water from domestic, agricultural and industrial waste sources.



2 THE WATER TREATMENT PROCESS

Wastewater from industry and other sources can also be recycled directly by water treatment facilities to be used as a source for drinking water. The water discharged by water treatment facilities must also be monitored and tested to ensure it is truly fit for reuse.



3 THE REGULATORY IMPORTANCE OF TESTING

There are significant regulatory pressures to ensure water quality remains high. Global regulatory agencies ensure that guidelines are followed. These include:

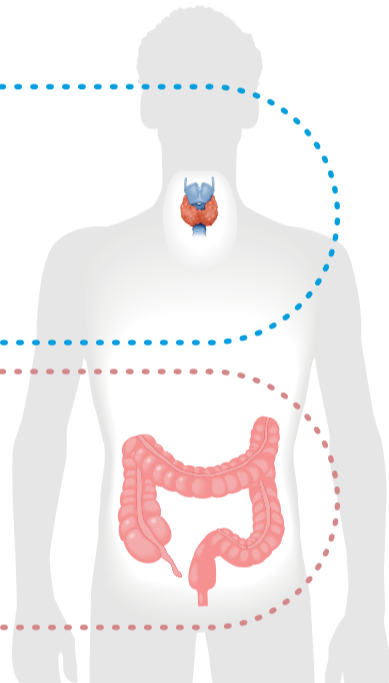


- U.S. Clean Water Act - National Pollutant Discharge Elimination System (NPDES)
- Safe Drinking Water Act (SDWA) - National Primary Drinking Water Regulations (NPDWRS)
- EU Drinking Water Directive
- European Commission – EC Council Directive 91/271/EEC

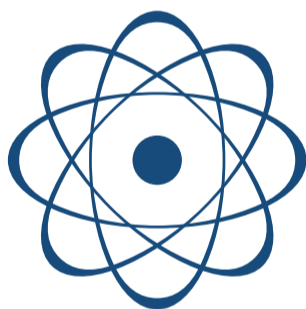
The regulatory requirements are frequently updated as new links to disease are discovered, for example:

Perchlorate was recently identified as an environmental contaminant in drinking water. It impairs normal thyroid function by interfering with iodine uptake by the thyroid gland. In February 2011, the EPA decided to develop a national primary drinking water regulation for perchlorate.

In 2011, the EPA also recommended improved monitoring for compounds containing chromium(VI) based on results from an independent survey showing that 35 U.S. drinking water samples exceeded the regulatory limits. Chromium(VI) is of particular concern since it is a highly toxic carcinogen linked to gastrointestinal and other cancers.



4 WATER TESTING IS ESSENTIAL FOR MAINTAINING QUALITY... BUT IT'S NOT ALWAYS EASY



Complex sample matrices can interfere with the detection of analytes of interest. For example, the concentration of anions and cations can significantly influence the chemistry of the water being treated and impact on testing processes.

Drinking water is also commonly treated with disinfectants to remove potentially harmful bacteria. However, these disinfectants also react with ions and residual organic matter resulting in the formation of disinfection byproducts. These are highly toxic and regulated.

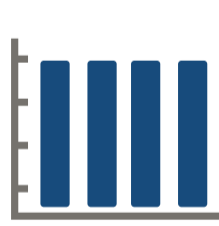
It is necessary to overcome challenges such as these to enable:



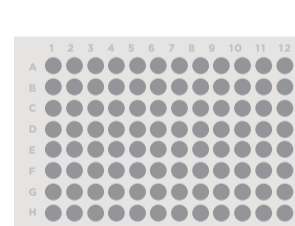
Detection of low levels of contaminants



Analysis of complex sample matrices

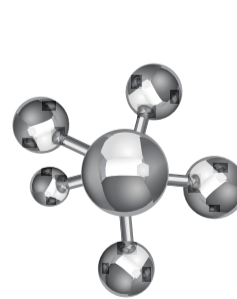
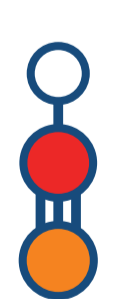
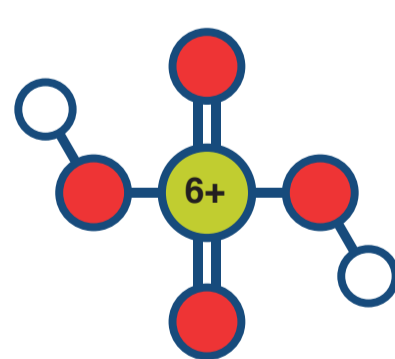
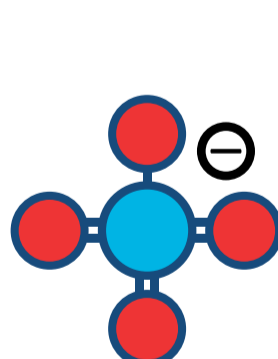
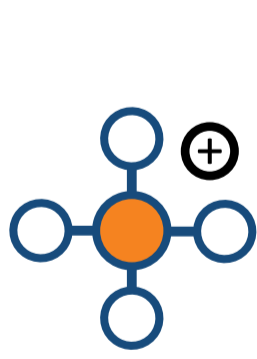
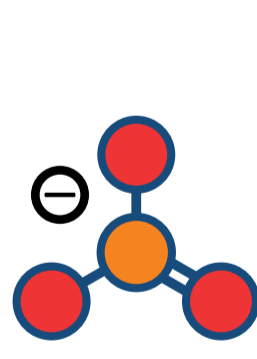


Reproducible methods that meet compliance standards



High-throughput testing that generates rapid results

5 EFFECTIVE TESTING SYSTEMS ARE ABLE TO DETECT AND QUANTIFY A RANGE OF POTENTIAL CONTAMINANTS



6 A NOVEL SOLUTION FOR EFFECTIVE ENVIRONMENTAL WATER TESTING

If you find yourself challenged to meet more stringent levels of detection, the Thermo Scientific™ Dionex™ Integriion™ HPIC™ System can be used for environmental water testing. You can rely on this system to produce consistent and trustworthy results.



- Seamless method transfer
- Comprehensive applications support for compliance monitoring
- Automated monitoring of consumables performance
- Better performance and increased method reproducibility using Automated Eluent Generation™
- High-pressure capability for faster run times without compromising data resolution