Scientists will soon be able to detect the presence of new chemical compounds in drinking water—using an overveld testing method that could potentially allow the agency to spot contaminants in treated water before they reach the human body very well, said Prof Cheryl Tan, director of the Nanyang Technological University’s Centre for Advanced Water Research (Newri).

“Water containing a wide range of contaminants and chemicals is expected to increase in the future, said Tan, who is working on lab-grown human cells, for the agency to conduct early-stage testing of substances that could be toxic to human cells in a more efficient manner.

Traditional testing methods are laborious, time-consuming, and expensive, and often require animal testing, which is used to detect toxic effects on human health. However, these methods are not always reliable, and the results may not fully reflect the potential risks to human health.

Newri, a research institute at NTU, has developed a novel testing method that uses lab-grown human cells to detect toxins in water more efficiently. The method involves pushing seawater through a membrane to remove dissolved salts and then using the resulting desalinated water to grow human cells in the lab.

“By using lab-grown human cells, we can detect toxins at an early stage, before they enter the human body, and with a higher degree of accuracy,” said Tan. “This method is more efficient and cost-effective than traditional testing methods.”

The new method could be used to test for a wide range of contaminants, including heavy metals, organic compounds, and endocrine disruptors, which are known to be harmful to human health.

Newri has already conducted some tests on lab-grown human cells and has found that they can detect toxins at concentrations as low as 1 part per billion. The institute is now planning to conduct more tests on a larger scale and to collaborate with government agencies and private companies to develop new testing protocols.

The new method could also be used to test for emerging contaminants, which are substances that have not been tested before but may pose a risk to human health. These contaminants include disinfection byproducts and pharmaceuticals, which are released into the environment through wastewater disposal.

“The new testing method could also be used as a warning system,” said Tan. “If toxins are detected in treated water, we can alert the public and the government immediately, giving them time to take action.”

Newri’s work on lab-grown human cells has received a $683 million funding boost from the National Environment Agency (PUB) and the National Research Foundation (NRF). The funding will support the institute’s research in emerging contaminants and early-stage testing.

“The additional funding will allow us to conduct more research and develop new testing protocols,” said Tan. “Our goal is to make drinking water safer and more reliable for Singaporeans.”

Newri is one of several research institutes in Singapore that are working on developing new technologies to improve water quality and sustainability. Other institutes include the Singapore National Environment Agency (PUB) and the National Water Agency (NWA).

“NTU is working closely with PUB and NWA to develop new technologies and solutions for water management,” said Tan. “We are also collaborating with other organizations, such as universities and companies, to create a network of research and innovation.”

The new testing method could also be used to test for natural contaminants, such as heavy metals and nutrients, which are known to be harmful to human health. Newri is also working on developing new technologies to remove these contaminants from water.

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Newri is one of several research institutes in Singapore that are working on developing new technologies to improve water quality and sustainability. Other institutes include the Singapore National Environment Agency (PUB) and the National Water Agency (NWA).

“The institute’s mission is to improve the quality of water and the environment, and to develop new technologies and solutions for water management,” said Tan. “Our goal is to make drinking water safer and more reliable for Singaporeans.”