

Annual Report on SDG6 Clean Water and Sanitation

6.3 Water usage and care

6.3.2 Processes to prevent polluted water from entering natural water systems

Thaksin University has established comprehensive measures to prevent polluted or hazardous water from entering water system, ensuring safety in both routine operations and emergency situations. **The university's wastewater network** is designed with separate pipelines for domestic greywater, wash-water, and laboratory effluent to avoid cross-contamination. Each chemical building is equipped with chemical drainage lines, retention tanks, and sedimentation ponds for temporary containment before transfer to the central treatment facility. All wastewater is treated biologically and chemically in compliance with national standards prior to discharge or reuse. The system capacity exceeds 2,400 m³ per day, supported by real-time monitoring and scheduled maintenance under the Division of Building and Environment.





Laboratories and research facilities strictly follow the ESPREL-Lab Safety standard issued by the National Research Council of Thailand (NRCT), which governs the safe handling, storage, and disposal of hazardous substances through certified waste-management companies. Chemical and biological waste are collected in sealed containers, documented, and transferred for off-site treatment to prevent any release into the environment. The university also enforces an institutional Emergency Response Plan, covering chemical spills and contamination incidents at university, faculty, and program levels, with annual safety drills supervised by the Environmental and Safety Committee. Research activities at TSU focus strongly on wastewater treatment and water-pollution prevention. Projects such as “Highly enhanced adsorption and photodegradation of various dyes in wastewater using CuAl-LDO/AC/Fe₃O₄ composites” and “Wastewater treatment using activated carbon from Krajoed residues” have demonstrated efficient removal of laboratory dyes such as Eriochrome Black T and natural reed-dye pollutants by adsorption and photocatalysis under visible light, achieving over 95 % decolorization. These research outputs are transferred to community enterprises to promote **zero-waste and clean-water innovations**.

Teaching and community engagement reinforce these practices. The **Energy and Environmental Chemistry Engineering Program** integrates environmental pollution, water-treatment technologies, and laboratory-safety modules into its curriculum to instill awareness of water conservation, wastewater reuse, and pollution prevention among students. Through service-learning projects, students collaborate with **local Krajoood-weaving communities** to apply TSU's treatment systems for dye-wastewater purification, supporting clean-water access and sustainable livelihoods.



Through these integrated policies, research, education, outreach, and operational systems, Thaksin University effectively prevents polluted water from entering its environment, ensures safe reuse of treated water, and strengthens its commitment to sustainability under SDG 6 (Clean Water and Sanitation) and SDG 12 (Responsible Consumption and Production).



คณะวิทยาศาสตร์และนวัตกรรมดิจิทัล มหาวิทยาลัยทักษิณ

ถ่ายทอดองค์ความรู้ “ต้านกัมมันตจากเศษกระจุกเพื่อบำบัดน้ำเสียที่ย้อม และต่อยอดของเสียเป็นผลิตภัณฑ์ใหม่” เสริมพลังชุมชนสู่การจัดการน้ำเสียอย่างยั่งยืน



Supporting evidence:

- Water-supply and monitoring records (January–December 2026) — Division of Building and Environment, TSU.
<https://app.powerbi.com/view?r=eyJrIjojMWZhNDI2N2Q3ZTUwMS00ZDNhLTNmNDktNzE0ZWl0Y2FkN2M2liwidCI6IjNkYTdmOTQ3LTU3NTAtNDYzMC04MDk2LWJiYTlmNzZlMjZhOCIsImMiOiEwfiQ%3D%3D>
- Catchment-area and raw-water-reservoir utilization report, Phatthalung Campus
https://sdg.tsu.ac.th/detail.php?id_list=160&aNum=20231108092953
- <https://tsu.ac.th/home/details.php?id=5527>
- <https://www.facebook.com/share/17RRzvZR1K/>
- Research Paper
<https://doi.org/10.1016/j.diamond.2025.112618>