Marine and Coastal Research Laboratory:
National Security Technology in the Maritime Environment

The only marine laboratory in the U.S. Department of Energy's national laboratory complex, Pacific Northwest National Laboratory's (PNNL's) Marine and Coastal Research Laboratory (MCRL) is uniquely positioned to conduct research and develop technologies toward sustainable energy, maritime security, and a resilient environment.

LOCATION

Situated on the Olympic Peninsula, just two hours from Seattle, MCRL features direct access to coastal ocean, proximity to semi-secluded test areas, the busy shipping channel leading to the major ports of the Puget Sound Area, and U.S. Department of Defense facilities.

MCRL features more than 15,000 square feet of research laboratories needed to develop and conduct advanced signature science. This includes wet laboratories for conducting basic research and testing technologies, an Arctic testing chamber for simulation of cold environments, and algal biofuels and algal toxin research laboratories.

CAPABILITIES

The expertise and facilities that reside at the MCRL specialize in research and technology development to understand the complexities in the marine environment. MCRL capabilities include:

- Evaluation of technology readiness, spanning from bench-scale laboratories testing to in situ field demonstrations using the underwater permitted testbed

- Payload development for diverse security missions and research needs

- Biofouling material development and testing for biofouling and corrosion impact to materials

- Waterfront training in a classroom and operational environment
- Permitted testing and training with the ability to use sealed radiological sources on the water
- Identification and detection of algal toxins, with analytical methods to monitor ecological health and coastal security
- Development of imagery analytics technology, artificial intelligence, and machine learning for maritime threat detection
- Arctic marine laboratory space dedicated to meso-scale testing of technologies in cold climates (i.e., oil spill response)
- Scientific dive team dedicated to evaluation and observation and a fleet of research vessels to support field deployments

OPPORTUNITIES

MCRL capabilities are helping solve some of the nation's most pressing issues in energy, climate science, and national security.

Researchers are exploring the coastal environment to detect changes and threats. They are developing platforms and systems to provide persistent signature measurement and detection in the coastal environment and to provide solutions using the underwater permitted testbed to evaluate realistic scenarios. This approach is enabling advanced research to develop new measurement capabilities, improve performance of deployed systems, and understand long-term responsiveness of in-water systems.
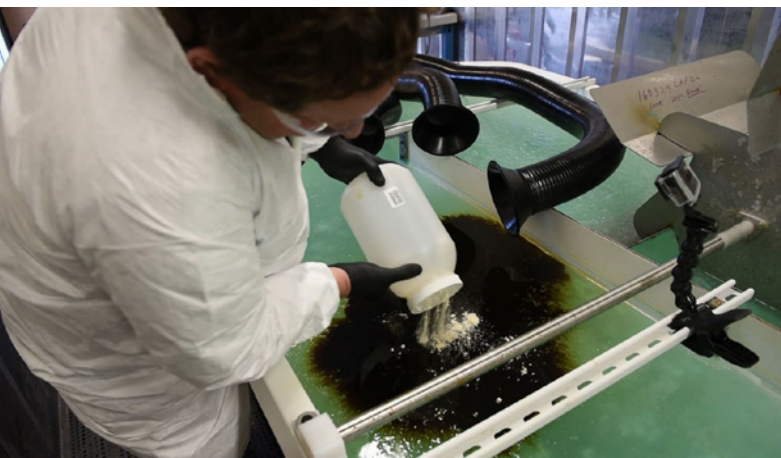
ABOUT MCRL

Researchers at MCRL provide new approaches to address the greatest challenges in detecting and responding to national and global maritime threats. MCRL is home to more than 60 staff members with expertise spanning biotechnology, biogeochemistry, ecosystems science, toxicology, modeling, engineering, and computational science. While many staff are based at MCRL, the full expertise of PNNL's 5,100 scientists and support staff can be engaged to provide the services needed to support our national security sponsors.

Learn more at https://www.pnnl.gov/marine-and-coastal-research-laboratory.

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