



Wastewater Treatment For Heavy Industrial Applications



WATER

Wastewater Treatment

Multiple Industrial customers are facing new federal, state, and local regulations to treat the wastewater from their facilities. Compliance is essential to protect the integrity of U.S. waterways while eliminating health hazards to human and marine life. New regulations across multiple industries are interrelated and touch on almost all aspects of a facility's water balance. Many utility and industrial sites are evaluating available technologies best suited for wastewater, groundwater, and surface water management to ensure compliance and to best manage their facility's operating costs.

UCC Environmental (UCC) understands Customers' complex wastewater challenges and is committed to providing safe, compliant, and reliable solutions to meet their water treatment needs. UCC is ready to serve you with technology and system integration, and services backed by an extensive list of successfully operating systems and a century of serving power and heavy industrial Customers.



UCC Water and Wastewater Services for:

- Power Generation
- Mining
- Pulp & Paper
- Oil & Gas
- Refining and Petrochemical
- Aggregates
- Iron and Steel
- General Regulation Compliance

The UCC Environmental Advantage

Wastewater management is unique to each site. UCC recognizes that treatment requirements will continually change throughout the life of a facility, requiring a predictable and agile solution. Our in-depth expertise provides clear differentiation from other system providers, and our comprehensive understanding of how to implement a safe and effective treatment program will serve your facility from design through post-closure care.

- **Expertise in Regulatory Compliance:** UCC wastewater experts have a comprehensive understanding of the changing water and wastewater regulations, which enables us to identify and proactively plan for and address compliance issues.
- **Diversity in Treatment Processes:** UCC's wastewater treatment team is comprised of specialists representing multiple industries and backgrounds who have intimate knowledge of industry-specific treatment processes that generate safe, reliable, and cost-effective solutions.
- **Holistic Solutions:** Our holistic approach takes into account your core process operating flexibility, compliance (both current and potential future), and costs (capital and operational) to develop value-added, customized, innovative wastewater treatment solutions.



- Performance Guarantees: UCC water and wastewater systems are backed by performance guarantees to mitigate risk and to provide Customers with compliant, operationally reliable systems.
- Single-Point Accountability: UCC provides continuity and complete control over all project delivery phases. This single point of contact simplifies the execution process, resulting in schedule adherence and overall project execution cost savings.
- Accelerated Execution: Our team applies dynamic, thoughtful actions to solve your most challenging problems and to maintain project momentum by leveraging a streamlined organizational structure that allows for an agile response to Customer needs.

- Custom-Engineered Solutions for Regulatory Compliance
- Proven Wastewater Treatment Solutions
- Operational Flexibility and Streamlined System Integration
- Turnkey/EPC Single Point of Contact Capabilities
- 100+ Years of Experience

Team Experience

Our team consists of technical experts, PhDs, and Professional Engineers with decades of experience in wastewater treatment, crossing multiple heavy industries, disciplines, and backgrounds. UCC has extensive knowledge in contaminant behaviors, wastewater chemistry, and treatment technologies and a detailed understanding of how and why water characteristics can change throughout the lifecycle of a water or wastewater project. From characterization, treatability, process design, technology selection, operation, and maintenance to a full suite of post-closure care support, we will partner with you to provide a customized solution for your wastewater remediation needs.



Wastewater

Capabilities

Partnering with UCC offers Customers industry-leading technical resources and environmental management solutions that meet the most complex water challenges they face. We pride ourselves on delivering sustainable systems, equipment, and services that are expected from a preferred environmental solutions provider.

Low-Volume Wastewater Treatment

UCC will evaluate your plant operations from the boiler house forward to ensure reliable, repeatable treatment system performance over various operating conditions specific to your facility. This allows us to reduce equipment complexity, maximize equipment availability, and ensure operational excellence through a detailed evaluation of your systems that significantly affect overall low-volume wastewater treatment system NPDES compliance.

Impoundment and Landfill Leachate

Whether you are in preliminary discussions for pond closure efforts or are determining how to best care for your lined landfill system, we can provide a full range of engineering services. This includes operation optimization to improve impoundment management, solids management, water treatability testing, process design, technology selection, operation and maintenance, and a complete suite of post-closure care options.

Groundwater Remediation

Whether you are in the early environmental impact assessment phase, optimizing your existing system's treatment performance, or designing your new groundwater project, we stand ready to help. Our engineering services include groundwater characteristics study, treatability testing, process design, technology selection and installation, commissioning and startup, and operations and maintenance.

Water Balance Optimization and Reuse

Most new water/wastewater treatment systems include the reuse of the treated effluent in one way or another. Proper balancing of inlet water with water losses from evaporation and from sludge disposal presents complex challenges for any facility. Managing these problems requires strong collaboration with the Customer coupled with an intimate understanding of the wet, industry-specific core processes.

Industrial Washwater Treatment

On-site demonstration testing is performed to validate compliance strategy and to optimize the reduction of suspended solids, removal of targeted heavy metals, and pH control for industrial washwater treatment. Modifications can be made during testing to devise a meaningful, customized plan to effectively meet compliance.





Temporary Mobile Solutions

We understand the budget, time, and resource constraints surrounding the continued operation of core processes and treatment infrastructure during unplanned events. UCC short-term solutions include:

- Temporary treatment solutions
- Mobile equipment
- Process integration design
- Installation services
- Operational support to ensure a low-impact solution to unplanned events

UCC has the unique capability to mobilize quickly for emergency response and to also transition the emergency response system to a long-term temporary or permanent capital system solution.

If an existing system is experiencing low efficiency or maintenance needs, UCC offers everything from media replacement on belts and plates, plate refurbishment services, and system improvement process and/or chemistry optimization. In addition, UCC provides mobile dewatering solutions for emergency, temporary, or operational flexibility needs.



Chemical Injection Skid Rentals

Skid-mounted wastewater treatment chemical injection systems are available for customers who require short- or long-term equipment that will reliably deliver chemical dosage and injection rates specific to their needs. Chemical injection rental units can be rapidly mobilized and operating at short notice and augmented with other mobile bolt-on system treatment options.

Proprietary UCC Wastewater Treatment Chemicals

UCC offers a complete suite of wastewater treatment chemicals designed for applications in heavy industrial markets. Our proprietary chemical formulations are customized for site-specific needs that maximize reliability while meeting local, state, and federal compliance requirements. UCC chemicals can be supplied with chemical injection skids for a cost-effective solution to improve process operations and enhance system performance.

Dewatering

A critical step in end-to-end wastewater treatment is material and sludge dewatering. UCC's approach to dewatering provides independent treatability studies and technology selection expertise.

Oil Water Separation

In many industrial facilities, oily wastewater is generated and requires treatment before discharge. UCC is well versed in traditional forms of free oil separation, including API separators, coalescing plate separators, dissolved air flotation, and dissolved nitrogen flotation (for combustible pollutants). In some cases, a chemical emulsion breaking step must be performed upstream before separation of free oils. UCC specialty chemicals can also be provided for this step.

High Biochemical Oxygen demand (BOD) and Chemical Oxygen Demand (COD) Waste Streams

Many facilities generate a waste stream high in BOD and COD. For direct dischargers, aerobic treatment alone may be too expensive in terms of aeration, and a two-stage anaerobic-aerobic process may be justified. Discharging this wastewater to a publicly owned treatment facility generally comes with a hefty surcharge based on the added oxygen demand. UCC can provide anaerobic solutions such as an up-flow anaerobic sludge blanket digester that will remove the bulk of the BOD while generating recovering methane—a valuable commodity today.

Solutions

Capabilities

Field Service

Our Field Service Engineers are available worldwide to assist with installation, commissioning, start-up through preventative maintenance, and parts inventory management for the system's service life. Our team has intimate knowledge of wastewater treatment systems and processes to help minimize downtime and reduce equipment failures.

Lab Testing and Analysis

UCC has robust lab capabilities that are instrumental in characterization and treatability efforts to ensure our proposed solution meets the true needs of the customer.

Program Management

UCC partners with customers to outline a program scope specific to their needs. An interorganizational team of UCC, the Customer, and strategic business partners is identified, and a division of responsibility and scope split are assigned. Our focus is to provide innovative solutions and value engineering while eliminating non-value-added costs.

Replacement Parts

UCC offers the most readily available inventory of replacement parts to minimize downtime and reduce operating costs. Thousands of replacement parts are in stock and ready for next-day shipment.

Technical Services

UCC delivers streamlined solutions backed by extensive knowledge and experience that you can count on.

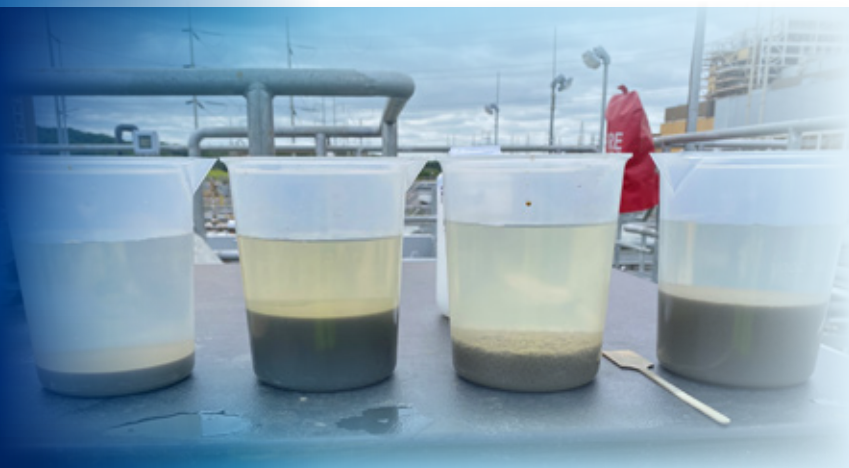
- Computational Fluid Dynamics
- Product Development
- 3D Measurement Technologies
- Balance of Plant Engineering
- Pipe Support Engineering
- Control Upgrades and Integration Services
- Electrical Power Distribution Design/Supply
- Product Rebuild Programs

Execution Approach

Our execution approach for capital and/or Operations and Maintenance budget needs includes contracting flexibility in design, bid, build, EPC turnkey, and financed models.

Additional Services


- Pilot Tests
- Studies and Evaluations
- Design Engineering
- Balance of Plant and Construction
- Operations and Maintenance Services
- System Integration
- Aftermarket Services







Value of Working with UCC

- Holistic WWT Regulations Solutions with Industry-Leading Performance Guarantees
- Proven Expertise in Wastewater Treatment Technologies
- Utility-Recognized Project Execution Approach with Turnkey Capabilities
- Site-Specific Engineered Solutions with Successful Operating References
- Extensive Fleet of Mobile/Modular Wastewater Treatment Equipment
- Equipment plus Chemistry Offering Optimizing Performance and O&M Costs
- Operational Flexibility and Streamlined System Integration
- Best-in-Class Post-Commissioning Support (Plant Operations Transition, Field Service, Parts, and O&M Services)
- Multiple Heavy Metal Treatment Options
- Intimate Knowledge of Utility DCS/PLC Controls Integration
- Established Customer Commercial Agreements



UCC environmental

SYSTEMS AND SERVICES

 <p>AIR</p>	<ul style="list-style-type: none"> – Dry Sorbent Injection – Activated Carbon Injection – Demonstration Tests – Chemical Testing Analysis 	<ul style="list-style-type: none"> – Bulk Material Property Testing – Metallurgical Analysis – Material Performance Testing
 <p>WATER</p>	<ul style="list-style-type: none"> – Ash Pond Dewatering and Treatment Services – CCR Material Handling/Dewatering – CCR Classification and Beneficial Use Guidance – CCR Impoundment WWT Systems (Permanent and Mobile) – Water Balance Optimization/Water Re-Use 	<ul style="list-style-type: none"> – Groundwater Remediation – Impoundment & Landfill Leachate – Industrial Washwater Wastewater Treatment – Low-Volume Wastewater Treatment – On-Demand WWT Equipment Rentals – Chemical Skid Rentals and Supply Services
 <p>SOLIDS</p>	<ul style="list-style-type: none"> – Fly Ash Handling – Bottom Ash Handling – Wet-to-Dry – Economizer Ash 	<ul style="list-style-type: none"> – Oil Ash – Fluidized Bed Ash – Silo Unloading – Industrial Applications
 <p>SERVICES</p>	<p><i>Technical Services:</i></p> <ul style="list-style-type: none"> – BOP and Engineering – 3D Measurement – Pipe Support Engineering <p><i>Support Services:</i></p> <ul style="list-style-type: none"> – Replacement Parts – Operations and Maintenance – Program Management 	<ul style="list-style-type: none"> – Crusher Rebuild and Exchange Programs – Control Upgrades and Integration Services – Electrical Power Distribution Design/Supply – Field Service – Construction Services – Lab Testing and Analysis



The UCC Environmental Commitment

As an industry innovator, we have long been at the forefront of providing superior solids handling and environmental solutions. We recognize the importance of supplying Customers with the best equipment and latest technology that meet their demanding requirements and plant needs. With our advanced in-house testing and innovation lab, we are able to maintain control over the quality and delivery of our systems and equipment while providing exceptional service wherever needed. This is our commitment to you.



Global Operations in:

United States • Europe • China • India

More Than 50 Offices Worldwide



uccenvironmental.com

UCC Portfolio of Environmental Solutions

Air

- Dry Sorbent Injection/Activated Carbon Injection
- Predictive Computational Fluid Dynamics (CFD) Modeling
- On-Site Testing and Demonstration
- Installation
- Mercury Mitigation Sorbent

Water

- Industrial Washwater Treatment
- Low-Volume Wastewater Treatment
- Impoundment Management and Wastewater Treatment
- Flue Gas Desulfurization (FGD) Wastewater Treatment
- Groundwater and Leachate Treatment
- Temporary/Mobile Solutions and Demonstration Testing
- Chemical Injection Skid Rentals
- Proprietary UCC Wastewater Treatment Chemicals
- High BOD/COD Waste Streams
- Oil Water Separation

Solids

- Fly Ash/Bottom Ash (Dilute, Medium, and Dense Phase)
- Wet-to-Dry Conversions
- Mill Rejects
- Economizer Ash
- Lime Handling
- Oil Ash
- Fluidized Bed Ash
- Silo Unloading
- Industrial Applications
- Biomass Ash Handling and Fuel Handling

Services

- Product Development/Technology and Test Lab
- 3D Measurement Technology
- Pipe Support Engineering
- Control Upgrades and Integration
- Electrical Power Distribution Design/Supply
- Crusher Rebuild and Exchange Programs
- Product Rebuild Program
- Balance of Plant (BOP) and Construction Services
- Program Management
- Field Service, Operations, and Maintenance Services
- Silo Services

System Components

- Air Pollution Control Components
- Crushers/Clinker Grinders
- Mechanical System Components
- Mixer/Unloaders
- Gates/Valves
- Pipe/Fittings
- Prime Movers/Separating Equipment
- Tanks/Vessels
- Coal Crushing Products
- Engineered System Components