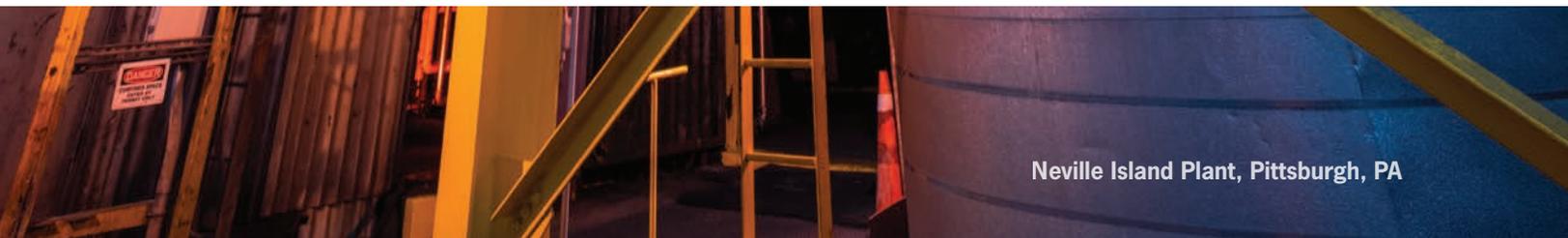




Industrial Services & Capabilities  
*Total Solutions, Complete Service*



Neville Island Plant, Pittsburgh, PA

# Who is Calgon Carbon Corporation?

- World's largest producer of Granular Activated Carbon
- Solves customer purification and separation problems with an array of technologies
- Water treatment is core competency with a diverse product portfolio

**1,400+**  
distinct  
applications

**25 offices**  
sales  
and service

**240**  
patents

**1,400+**  
employees

**20 facilities**  
manufacturing  
reactivation  
equipment

**75+**  
years of  
experience

## Diverse Product Portfolio

Calgon Carbon, a subsidiary of Kuraray, is a global leader in the manufacture, supply, reactivation, and application of activated carbons and advanced ion exchange (IX) technologies for industrial and commercial manufacturing processes. Our innovative product portfolio includes coal-, wood-, and coconut-based activated carbon products, in granular, powdered, pelletized, and cloth form, to meet the most challenging purification demands of customers throughout the world.



GRANULAR ACTIVATED CARBON



POWDERED ACTIVATED CARBON



PELLETIZED ACTIVATED CARBON



DIATOMACEOUS EARTH



PERLITES



ION EXCHANGE RESIN

# Industries We Serve



## Food & Beverage

- Sweeteners
- Glycerine
- Brewing & bottling
- Acids/chemical purification
- Vitamins
- Tobacco
- Decaffeination
- Pharmaceutical

## Environmental

- Remediation
- Wastewater
- Air treatment

## Industrial

- Liquid chemicals
- Catalyst process
- Gas processing
- Water processing
- Ultrapure water
- Biobased chemicals

# Applications

## Air Pollution Control

Activated carbon material and systems are utilized to capture toxic air pollutants (primarily volatile organic compounds or VOCs) from petrochemical plants, landfill sites, manufacturing operations, and chemical processing facilities.

## Separation & Recovery

Calgon Carbon's technology, whether activated carbon or ionic separation (ISEP), is used for a variety of production, purification, and material recovery industrial processes that include separation and recovery in hydrometallurgy, decolorizing, production of organic and inorganic chemicals, and production of fertilizer and high-purity salts.

## Process Purification

Activated carbon adsorption can be used to remove a wide range of trace impurities, such as specific organics, TOC, and constituents that impact color, as well as various intermediates and specialty chemicals.

## Site Remediation

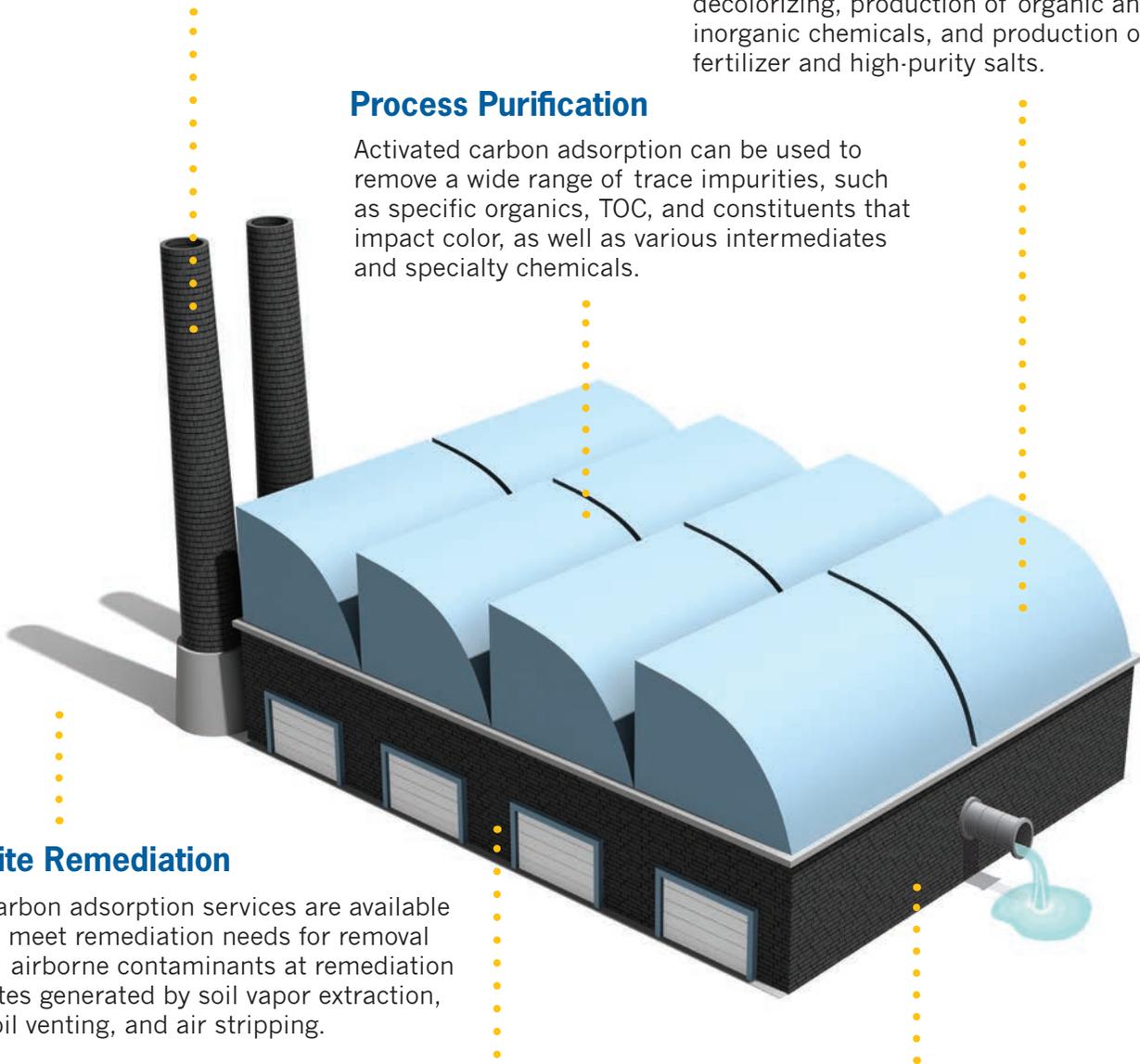
Carbon adsorption services are available to meet remediation needs for removal of airborne contaminants at remediation sites generated by soil vapor extraction, soil venting, and air stripping.

## Incoming Potable Water

Incoming potable water is treated through activated carbon to dechlorinate, dechloramine, and remove chemicals that would affect the manufacturing process.

## Water & Wastewater Treatment

Wastewater discharging regulations exist to keep lakes, streams, and rivers near industrial parks safe from pollution. We help these industries meet the regulations and stay in good standing with their communities.



# Our Equipment

Calgon Carbon offers the industry's most extensive range of equipment service solutions—including service for transporting spent carbon to one of our reactivation facilities—all designed to make the job of managing your vapor and liquid phase carbon adsorption systems easier than ever.

Calgon Carbon has an 80,000 sq. ft. Equipment Fabrication and Assembly plant located in Pittsburgh, PA. The facility's capabilities include fabrication, lining, and painting of both standard and customized carbon steel vessels, and piping. We also have ASME Section VIII Div1 code capabilities and the ability to fabricate pipe to ANSI B31.1 or B31.3 specifications.

## Liquid Phase Equipment

Equipment	Carbon (lbs)	Pressure (psig)	Maximum Range (gpm)
FLOWSORB	180	3	10
DISPOSORB	165–1,000	7.5 maximum	10–30
CYLCESORB	1000–2,000	75	30–60
PROTECT SERIES	500–2,000	75	70
MOBILE ADSORBERS	14,000	35–65	250
MODEL 10/12 SYSTEM	40,000	125	700
MODEL 12–40	80,000	125	700 per vessel, operated in series
MODEL 14 SINGLE	60,000	125	1,030
DUAL MODULE/EXPRESS	40,000	75	300 per vessel, operated in series

## Vapor Phase Equipment

Equipment	Carbon	Pressure (psig)	Maximum Range (cfm)
VENTSORB	180	1–4	100–200
HIGH-FLOW VENTSORB	500–3,000	3	3,000
VAPOR-PAC	1,800	15	1,000
VAPOR-PAC 10	12,500	0.5	10,000
VAPOR-PAC 5	6,300	5	5,000
PROTECT	450–18,000	0.5–15	450–10,000

# Superior Performance



## Equipment Benefits

Calgon Carbon's equipment line is designed and engineered to provide:

- Lower operating costs
- Longer equipment life
- Operational flexibility
- Safer equipment design

## Unique Capabilities

Equipment specification is important, particularly in an industrial environment where the nature of the application leads to greater wear and tear. We offer the ability to custom design systems to meet your specific application needs.

- Capabilities to design and scale-up
- Customizable construction
- Delivery and removal
- Process expansion options
- Internal cone

## Service Partner

We have a fleet of service equipment—in both liquid and vapor phase systems—available for rapid deployment to meet all of your treatment objectives.

- Emergency response
- Temporary treatment
- Process expansion
- Site excavation and groundwater treatment
- Off-spec product treatment

# Our Service Cycle



- What is the application or challenge?

- Does the product work for the application?
- What is the most cost-effective solution?

- Activated carbon
- Equipment
- Manufacturing
- Delivery

- Reactivation
- Field services
- Technical representatives
- Financial assistance
- Customer service



## R&D Innovation Capabilities

Calgon Carbon has a world-class Innovation Center and we are committed to helping our customers meet their toughest purification problems. Our technical organization includes both Research and Development and Business Innovation teams to balance the need for exploratory and applied work.

Calgon Carbon performs computer modeling, various benchscale tests, including isotherms, accelerated column tests, and customized experiments, to simulate GAC performance and reactivation in customers' applications.

We offer quarterly monitoring and analysis services to our customers. This not only helps determine the remaining life of the GAC, it also helps our customers budget and plan for future exchanges.

Our Innovation Center has the capability to perform customized laboratory reactivation to determine suitability for custom reactivation.



Testing Process



## ISOTHERM

...

## PILOT

...

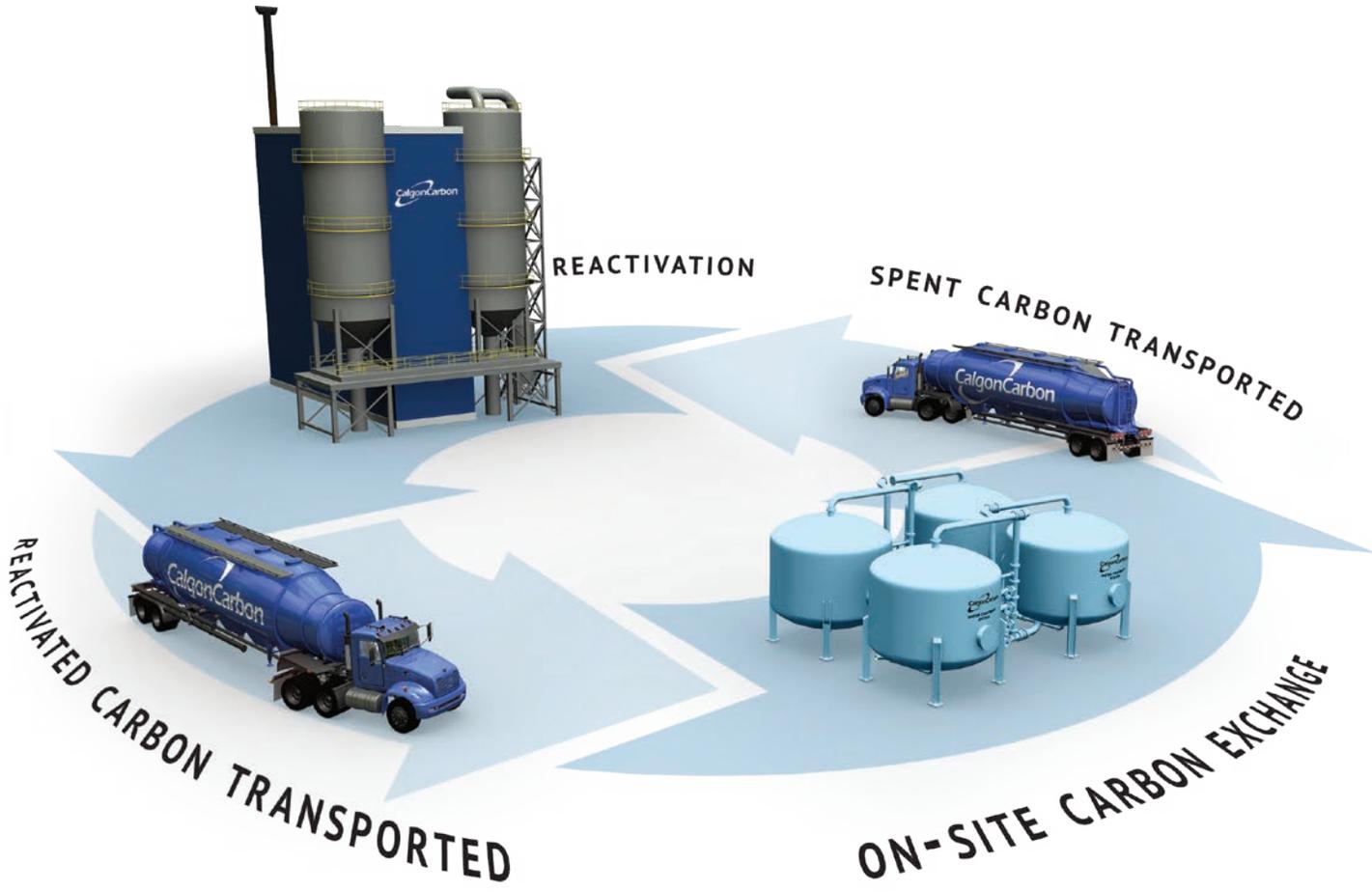
## FULL SCALE PLANT

Static Test  
Go-No-Go  
Order of Magnitude  
of Carbon Usage

Dynamic Test  
Contact Time  
Linear Velocity  
Carbon Volume

Continued Service  
Process Optimization  
Carbon Optimization  
Carbon Exchange

# Reactivation Services



Calgon Carbon reactivation services include the reactivation of spent granular activated carbon on a pool or custom basis.

recycle



## Reactivation

Customers in the industrial, food and beverage, and municipal industries can have their spent carbon custom reactivated with the resultant product being returned to them. Alternatively, customers may choose to include their spent carbon in a collective pool for reactivation, which is a cost-effective alternative when getting your own material returned is not required.

### Benefits of Reactivation:

- Minimize waste
- Eliminate potential for future liabilities
- Reduction of CO<sub>2</sub> emissions
- Reduced cost



## Logistics

Calgon Carbon's logistics team ensures that we have the right products in the right place at the right time. We own a private fleet of trailers, each with different specifications, to ensure the delivery of fresh GAC and a safe removal and transportation of spent GAC. Our dedicated skilled drivers work hard to meet customers' needs and requests in a timely and efficient manner.

From its manufacturing facilities, Calgon Carbon distributes its products to strategically located warehouses throughout the U.S. to reduce customer lead time and total logistics costs.



## Field Services

Calgon Carbon has a national Field Service Team and has provided on-site services for our customers for more than 40 years. They are fully trained for equipment installation, repair, maintenance, and carbon exchanges.

We employ skilled full-time Field Service representatives nationwide, and many have developed strong relationships with our customers over the years.

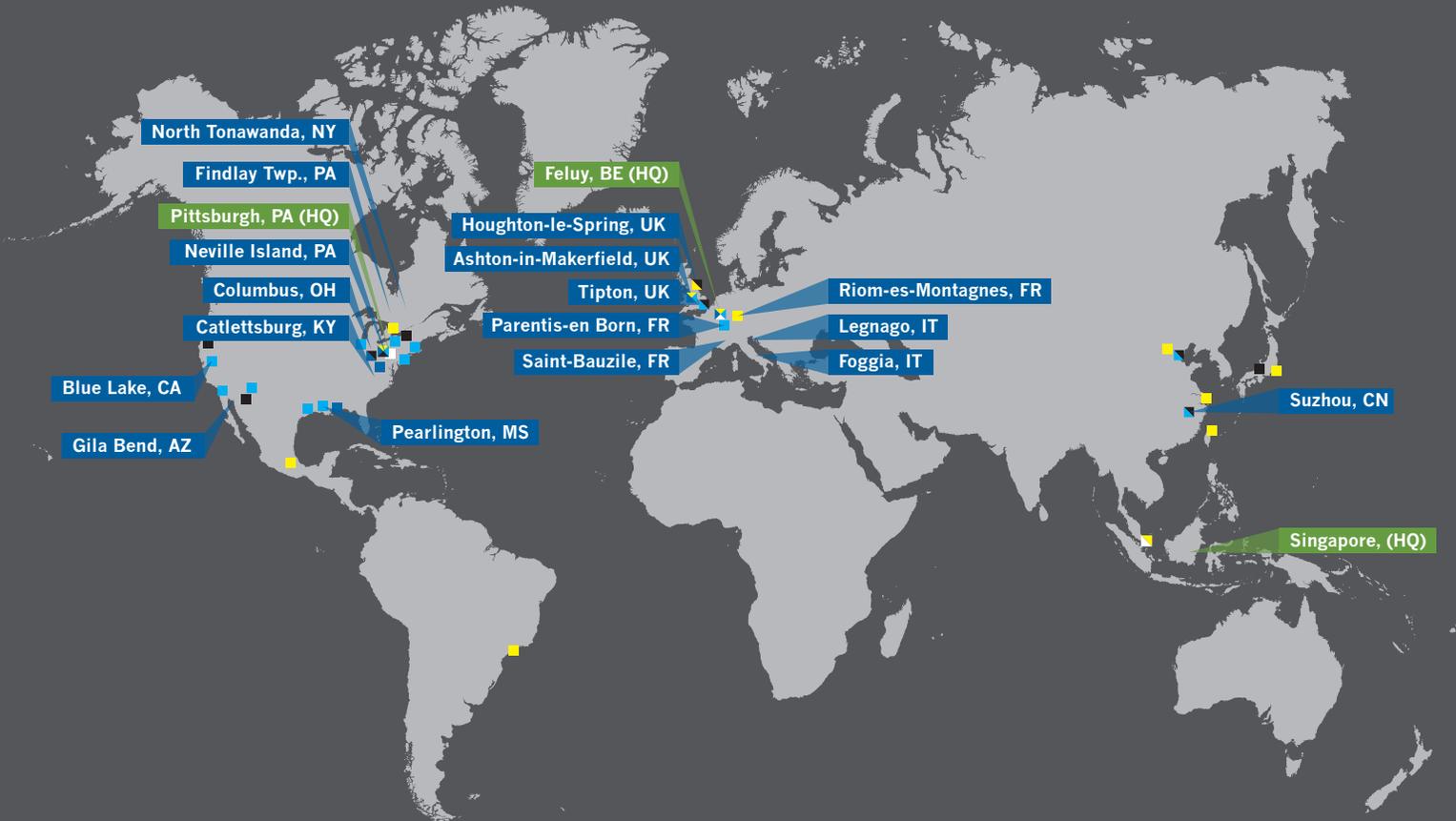


## Customer Service

Calgon Carbon's Customer Service Department is responsible for the rapid and accurate processing of our customers' orders and ensuring the appropriate products are delivered when required. Our highly skilled, helpful, and knowledgeable customer service staff works diligently by responding to our customers' concerns and maximizing value and support.

# reduce reuse

# Your Global Partner



[calgoncarbon.com](http://calgoncarbon.com)

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