A Healthy Environment

Chemical engineers are at the forefront of environmental regulations, designing and maintaining systems in order to protect our precious natural resources: Land, Water, Air

- Water: From drinking water, to wastewater treatment, recycling, and resource conservation, chemical engineers design applied technologies that enhances people's everyday lives.

- Air: is what we breathe, and chemical engineers assist in maintaining it clean. Chemical Engineers design equipment and processes that remove unwanted contamination caused by many stationary and mobile sources.

- Soil: Chemical Engineers have a visible presence in the multi-disciplinary effort to protect the soil, treat contaminated discharges and develop technologies and processes to clean up the land…. where crops grow, buildings are built and parks exist for children to play.

Chemical Engineering is Fun Because:

- There are opportunities to experiment in the Lab and in the Pilot Plant (Pilot plants are used for larger scale testing.)
- You work with large scale equipment
- You help design technologies to reduce, eliminate and reverse the effects of contamination.
- You play a key role in bringing crucial products to market like water, fuels, electricity, polymers and medicines
- You work with many technologies
- You work with people from many trades and specialties
- You are always learning

Learn More at:

www.aiche-metrony.org

www.aiche.org/Students/

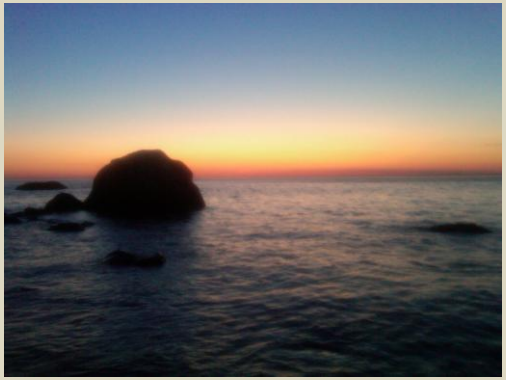
www.che.com

www.cheresources.com

www.engineeryourlife.org

www.worldwidelearn.com/online-education-guide/engineering/chemical-engineering-major.htm

Chemical Engineering in the Environmental Field



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What it Does

1 Soil: From leaking underground storage tanks to tanker truck spills, releases into the soil can cause severe and permanent damage to health and the environment and reduce property values

2 Dust collector: Construction jobs require cement and concrete. And the batch plants need to be in close proximity to the construction sites, as cement cannot travel large distances in trucks. The urban cement plants require a high degree of air monitoring to control particulate emissions into the air.

3 Water Treatment systems in a construction site are required to continuously withdraw groundwater during excavation and construction activities.
The groundwater in this case is coming from a site that used to be a gas station. Discharge of this water into the sewers requires special permits and a design to treat the effluent to regulated discharge limitations.

Uses these Engineering Principles

1 Chemical reactions, kinetics, flow of fluids through porous media, flow through pipes, pumps and tank design, materials of construction

Chemical Engineers design, develop, and implement clean ups of contaminated sites

2 Filtration technology, flow of solids in an air stream, capture velocities

Other unit operations involved in cleaning air streams of pollutants are adsorption, chemical reactions, scrubbers, electrostatic precipitation, and catalysis. These are technologies that are designed, modified, and approved by Chemical Engineers.

3 In this example, the treatment system was designed and sized to meet the needs of the construction company erecting a building, taking into account the recharge velocities of the aquifer. Treatment is based on the concentration of incoming pollutants and the discharge limitations are set by regulations.