



SEWER SCIENCE

For High School Students



Team Up With Central Contra Costa Sanitary District

Introduce your high school students to Sewer Science. This hands-on lab will teach them about local wastewater treatment using specially designed tanks, analytical equipment, and a student workbook. Developed specifically to meet the needs of grades 9 through 12, the curriculum integrates chemistry, physics and microbiology while addressing pollution prevention, technology, and municipal issues. This program will excite your students about water science and introduce students to careers in the wastewater field.

What does Sewer Science do?

- Teaches students the basic concepts of how wastewater is treated prior to being returned to the environment
- Links science and technology to environmental impacts and issues.
- Is interdisciplinary- microbiology, chemistry, physics, and environmental science
- Fosters an awareness about the effects of household chemicals
- Encourages students to take responsibility for the household products that they use

How does the lab work?

Students prepare simulated wastewater and spend a week analyzing and treating the wastewater. Students manipulate Plexiglas models of treatment processes in a series of experiments that results in data which can be analyzed and evaluated. During the 5-day lab, students realistically simulate the following wastewater treatment processes:

- **Primary sedimentation**
- **Biological sedimentation**
- **Secondary sedimentation**
- **Filtration**
- **Disinfection**

Students measure water quality parameters, plot their data, and compare their results with local discharge limits mandated by the Environmental Protection Agency.

What you need to get the program in your classroom

Schedule a 5-day session format

Provide basic laboratory materials (glassware, scales, microscopes, etc.)

Provide a post-session evaluation of your classroom experience

The program can help you meet educational science standards

The Sewer Science laboratory integrates national science standards while teaching key science concepts:

- **use of density for separations**
- **pH, alkalinity and acidity**
- **microbial diversity**
- **ammonia, nitrates and the nitrogen cycle**
- **dissolved oxygen and chemical oxygen demand**
- **human impacts**
- **limits of technology**

Here's what you get with the program

- **All the special tanks, testing equipment, and ingredients for running the lab**
- **A comprehensive workbook for each student**
- **A teachers resource manual (including background information and other learning activities and experiments)**
- **Teacher classroom assistance**
- **Lab grading tests**
- **An optional tour of Central Contra Costa Sanitary District treatment plant**

Who created this curriculum?

The Sewer Science curriculum was developed in 1997 through a collaboration of the city of Palo Alto's Regional Water Quality Control Plant (RWQCP), San Jose State University, and Menlo-Atherton High School, Menlo Park, CA. Further development and support funding was provided by the South Bayside System Authority, Central Contra Costa Sanitary District, Community Foundation of Silicon Valley, and the California Department of Education.

To schedule a lab or get additional information

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