DOCUMENT RESUME

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ABSTRACT

This document is part of an interdisciplinary career education program for seventh level students. Two major occupational clusters, environmental control occupations and agribusiness and national resources occupations are covered. Each of the 12 modules presented is self-contained, and integrates career information and education with various activities in the areas of English, math, science, and social studies. For each module a rationale, general objective, materials list, behavioral objectives, activities, and a pre and post test is included. (JC)

TITLE OF CLUSTER.....MAN AND NATURE WORK TOGETHER

TO ACHEIVE BALANCE AND BEAUTY

VOCATIONAL Exemplary PROJECT
HUNTSVILLE City Schools
HUNTSVILLE, Alabama

TITLE OF CLUSTER: MAN AND NATURE WORK TOGETHER TO ACHEIVE BALANCE AND BEAUTY

RATIONALE:

This cluster of modules in presented in an effort to:

1. Encourage students to relate their academic experiences to real life situations.

2. Encourage teachers to use an interdisciplinary approach in presenting various learning activities to students.

3. Help students realize the many ways in which the labor force changes as man and his needs change.

4. Introduce students to the following occupational clusters and various jobs within each cluster.

   a. Environmental Control Occupations

   b. Agri Business and National Resources Occupations

5. Encourage students to develop positive attitudes toward themselves as they relate to others and to their environment.

Although this cluster is presented as an interdisciplinary teaching tool, each module is self-contained and teachers are encouraged to pull and use information from the cluster in order to enrich other planned units of instruction.

The cluster, written on level seven, contains a variety of activities; thus, making any module adaptable to a cross-section of ability and acheivement levels.

TABLE OF CONTENT

"Career Development"

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Huntsville City Schools

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TITLE OF MODULE.....LETS TALK ABOUT POLLUTION

MODULE: Lets talk about pollution

LEVEL: 7th

RATIONALE:

The purpose of this module is to help student learn to effectively communicate their thoughts to others and to give them practice in discussing newly acquired knowledge in order that they will feel comfortable expressing themselves.

GENERAL OBJECTIVE:

To study the various methods of group problem-solving.

MATERIALS NEEDED:

Books and Pamphlets.

BEHAVIORAL OBJECTIVES:

The student will do the following with 90% accuracy:

1. Apply the rules of group discussion.
2. Research a particular problem of environmental control.
3. Discuss the result of his research.
4. Debate "should the federal government impose more severe penalities on polluters"
5. Deliver a five minute speech on pollution.

PRE-TEST:

Give a two minute speech on pollution.

ACTIVITIES:

1. Read and discuss rules of group discussion and debate from, Group Problem-Solving Through Discussion, Indianapolis, The Bobbs-Merrill Company, 1965, pages 78-83.

2. Participate in a discussion with a local lawyer on the laws and penalities of pollution.

3. Conduct a survey to determine public attitude about pollution.

4. Role-play a member of an environmental control committee interviewing the manager of an industry that is guilty of pollution.

5. Use the library to research a particular problem of pollution.

6. Practice public speaking (three attempts for the same speech)

7. Read, discuss and practice, the rules of debating - Robert, Henry, Robert's Rules of Order, Chicago, Scott Foresman and Company, 1951.

POST-TEST:

Deliver a five minute speech on any area of pollution.

ANSWERS TO PRE-TEST:

To be evaluated by teacher through observation.

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TITLE OF MODULE.....SCALE DRAWING

MODULE: Scale Drawing

LEVEL: 7th

RATIONALE:

The purpose of this module is to help students understand how to scale down drawings of large objects to fit the size of paper used.

GENERAL OBJECTIVE:

To teach students to read scale drawings and to learn to construct his own.

MATERIALS NEEDED:

Rulers, Drafting Paper, Books, Newspapers, and Magazines.

BEHAVIORAL OBJECTIVES:

The student will do the following with 90% accuracy:

1. Use tools of measurement in drawing.
2. Translate scaled readings to actual measurements.
3. Read and draw "blueprints."
4. Construct a scale model of a sewage treatment plant. (group project)
5. Prepare a blueprint for a two bedroom house. (individual project)

PRE-TEST:

1. If the scale on a map is 1 inch = 50 miles, then 4 1/2 inches equal: (a) 100 miles (b) 225 miles (c) 200 miles

2. A blueprint is: (a) plan (b) model (c) blue newspaper

3. A person who works with scale drawings is a: (a) draftsman (b) artist (c) craftsman

ACTIVITIES:

1. Visit engineering firm in which many draftsmen work.
2. Resource person (architect) talk about the importance of accuracy in scale drawings.
3. Study attached sheet.
4. Collect and display and study blueprints from newspapers and magazines.
5. Read pages 295 and 296 in, Mathematics in Life, Febr, Howard)

POST-TEST:

Draw a blueprint for a two bedroom house where, 1/2 inch equals 3 feet.

ANSWERS TO PRE-TEST:

1. 225 miles
2. Plan
3. Draftsman

ANSWERS TO POST-TEST:

Teacher will determine the degree of accuracy of the measurements in the drawings.

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TITLE OF MODULE.....THE EXPENSES INVOLVED IN LANDSCAPING

MODULE: Expenses involved in Landscaping

LEVEL: 7th

RATIONALE:

The purpose of this module is to encourage students to want to improve and beautify their surrounding. One step toward reaching this goal is learning some facts about basic cost of plants and learning to figure the total cost involved in a planting project.

GENERAL OBJECTIVE:

To have students learn to figure the amount of money one would need, in order to pay for a certain number of plants and to pay for the labor involved in planting.

MATERIALS NEEDED:

Pencil--and-Paper

BEHAVIORAL OBJECTIVES:

The student will do the following with 90% accuracy:

1. Figure the cost of certain number of plants based on a unit price.

2. Figure the number of plants one would need to cover a certain area.

3. Figure the cost of labor at a given hourly wage and time, that will be needed to complete the Job.

PRE-TEST:

1. If one pink dogwood tree cost $6.95 plus 6% tax, How much would two trees cost.

2. If cherokee chief dogwood trees should be planted 6 feet apart, How many trees would you need to cover 126 feet.

ACTIVITIES:

1. Select plants of their choice using, Modern Landscaping, A.B. Horse Company, 1970, Barrington, Illinois.

2. Consult with nurseries by phone or in person, as to the cost of plants and local growing conditions.

3. Discuss the business aspects of landscaping with a landscaping contractor, a nursery worker and a nursery manager.

4. Work problems dealing with hourly wages and workers.

POST-TEST:

1. Landscape the drawing that vou have alreading prepared (See scale drawing module). Figure the total cost of plants and labor.

ANSWERS TO PRE-TEST:

1. $14.73

2. 21 trees

ANSWERS TO POST-TEST:

Teacher will grade students' work based on accuracy of figures for plants involved in landscaping project.

Students will also be graded on accuracy of computions related to labor cost for doing their project.

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TITLE OF MODULE.....PAYROLL DEDUCTION

MODULE: Payroll Deductions

LEVEL: 7th

RATIONALE:

Every person who works on a job should be aware of the procedures followed in making deductions from his paycheck. Therefore, this module is designed to acquaint students with the various deductions that must be taken from a salary when one works.

GENERAL OBJECTIVE:

To give students a chance to figure deductions and understand what deductions are common to all salaries.

MATERIALS NEEDED:

Books, Tax Charts, and Tax Booklets.

BEHAVIORAL OBJECTIVES:

The student will do the following with 90% accuracy:

1. Figure deductions for a salary of a person with no dependents, considering all deductions.

2. Figure deductions for a salary of a person with three dependents.

3. Tell the percent of each deduction on State and National Level.

4. Identify his social security number.

5. Apply for deduction benefits.

PRE-TEST: (True or False)

1. Everyone who works is suppose to have deductions taken from his salary.

2. Anyone can figure his deductions if he studies the deduction charts.

3. A social security number is needed if one works on a job.

4. Federal and state deductions are used for taxes.

5. Social Security is used for taxes also.

ACTIVITIES:

1. Read pages 290-301 - Succeeding in the World of Work, Kimbrell - Vineyard.

2. Study the charts that compute the percentage that is to be taken out for each withholding.

3. Resource person from social security and unemployment office.

POST-TEST: (True or False)

1. The percentage of taxes withheld varies with the dependents.

2. 5.2 percent is taken out of a salary for social security.

3. A person who makes $75.00 per week will pay $3.90 into social security benefits.

4. A person who has two dependents will pay more taxes than one without any dependents.

POST-TEST: (continued)

5. A Social Security number is always needed for payroll deductions.

(Also use the five (true or false) used for the pre-test)

ANSWERS TO PRE-TEST:

1. True
2. True
3. True
4. True
5. False

ANSWERS TO POST-TEST:

1. True
2. True
3. True
4. False
5. True

Last five (same as pre-test answers above)

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TITLE OF MODULE.....WATER POLLUTION

MODULE: Water Pollution

LEVEL: 7th

RATIONALE:

This module is prepared in order to acquaint students with existing problems and future problems related to water pollution.

GENERAL OBJECTIVE:

To teach the problems of water pollution and how these problems relate to individual citizens.

MATERIALS NEEDED:

Films, Books, and Samples of Pollution.

BEHAVIORAL OBJECTIVES:

After students have been exposed to the learning experiences in this module, they will be able to do the following with 90% accuracy.

1. List five sources of water pollution.
2. List three ways in which their personal habits should change as a result of more knowledge about pollution.
3. List three ways in which pollution affects them and their families.
4. List and describe five scientific occupations that dealwith water pollution.

BEHAVIORAL OBJECTIVES: (continued)

5. Measure a cubic foot of water.

6. Relate the problems of pollution to changes in the labor force. (creation of new jobs)

PRE-TEST:

1. A good indication of the degree of pollution is:
(a) dead fish (b) wild life (c) dysentery

2. The scientist that works with pollution is:
(a) chemist (b) entomologist (c) doctor

3. Too much hot water from nuclear power plants is:
(a) dysentery (b) thermal pollution (c) entraplication

4. One way to purify contaminated water is: (a) get rid of wild life (b) reduce the population (c) Use a synthetic membrance that operates as osmosis in reverse

5. A water quality control officer's job is to: (a) decide how much water we need to drink (b) decide when water is safe to drink, swim, fish, etc. (c) decide how much water wild life needs for drinking.

ACTIVITIES:

1. Field trip - water pollution research (Alabama A&M University)

2. Construct solor stills or set up aquarium to demonstrate the water cycle.

ACTIVITIES: (continued)

3. Collect and analyze water samples from various streams, drinking sources and recreational facilities.

4. Make a comparative chart on water quality.

5. Film - It's your decision - Clear Water - Associated Films, Inc., Ridgefield, New Jersey.

6. Film - The Problem With Water is People - McGraw Hill Film Department, 330 W. 42nd Street, New York 10036.

7. Resource Speaker - Environmental Control Laboratory - Huntsville, Alabama.

8. Resource Speaker - County Health Department

9. Draw a simple diagram showing the progress of water waste through a treatment plant. (Read a Boy Scout Leader's Guide, page 2.)

POST-TEST:

1. Who can do something about water pollution?

2. Name some specific persons who can do something about water pollution?

3. What is water pollution?

4. What does pollution consist of?

5. Show the progress of waste water through a treatment plant.

ANSWERS TO PRE-TEST:

1. Dead Fish

2. Chemist

3. Thermal Pollution

4. Use of synthetic membrane that operates as osmosis in reverse.

5. Decide when water is safe to drink, swim, fish, etc.

ANSWERS TO POST-TEST:

1. Everybody

2. The builders, the farmer, the industrialist, the boat owner.

3. Water pollution is any foreign substance in water that decreases its value for any use including public water supplies, progagation of fish and acqustic life and wildlife.

4. Pollution consists of sewage; industrial and agricultural waste.

5. This drawing can be compared with the drawing found in the book - "A Boy Scout Leader's Guide."

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TITLE OF MODULE.....ENVIRONMENTAL RECYCLING

MODULE: Environmental Recycling

LEVEL. 7th

RATIONALE:

The environmental challenge has become the concern of many of our youth, so much so, that they are seeking ways of meeting the crisis effectively. Education must be concerned with the problem inorder to acquaint the students with various proposals and recourses in dealing with sensible use and reuse of civilizations waste products.

GENERAL OBJECTIVE:

To teach students the various ways of dealing with the reuse of recyclable wastes.

MATERIALS NEEDED:

Waste paper, cans, dead plants, etc.

BEHAVIORAL OBJECTIVES:

The student will do the following with 90% accuracy:

1. Recycle to get by-products.
2. Collect waste paper for recycling.
3. Crush glass and melt to make new glass products.
4. Recycle organic waste into fertilizer, plant and animal food.
5. Keep a record of the amount of reusable waste your family produces.

PRE-TEST: (True or False)

1. Waste paper can just be burned without harming environment.

2. There are no recycling plants in Huntsville.

3. College teach courses in environmental control.

4. Waste paper can be used again.

5. Some farmers now raise hogs on recycled garbage.

ACTIVITIES:

1. View film, "What's New In Solid Waste Management."

2. Demonstration on "Controlling Trash" - (Sears Trash Master)

3. Collect waste paper and take to processing station for recycling.

4. Crush glass and melt to show recycling into new products.

5. Take students to the recycling station of tin cans and other waste.

6. Study new products on the U. S. Market dealing with the recycling process.

7. Bring resource person, (Mr. Holtkant, Wastepaper Stock, Inc.)

POST-TEST: (True or False)

Use the same as Pre-test.

ANSWERS TO PRE-TEST:

1. False
2. False
3. True
4. True
5. True

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TITLE OF MODULE.....CONSERVATION AND JOBS

MODULE: Conservation and Jobs

LEVEL: 7th

RATIONALE:

This module is prepered for the purpose of helping students realize the kinds and numbers of jobs that have become available within the last ten years as a result of the recent emphasis on conservation.

GENERAL OBJECTIVE:

To have students relate labor trends to current events.

MATERIALS NEEDED:

Scrapbook, Construction Paper, Glue, Poster Board, Magic Markers, Projector, Screen, Transportation for Class.

BEHAVIORAL OBJECTIVES:

The student will do the following with 90% accuracy:

1. Explain four different kinds of jobs that are related to conservation.

2. List and explain three areas of conservation.

3. Write job descriptions of two employees in their community who are involved in conservation.

4. Elaborate on the reasons for the recent emphasis on conservation.

BEHAVIORAL OBJECTIVES: (continued)

5. Relate the present emphasis on conservation to future living conditions.

6. Learn to recognize current events that have implications for changes in the labor force.

PRE-TEST: (True or False)

1. Conservation is related to jobs and to people.

2. The kind of work that people do have nothing to do with the environment.

3. Shooting rabbits and deer whenever one wants to, will not harm anything.

4. Conservation workers are trying to get all undesirable animals such as snakes, tigers, and foxes, in zoos so that they can-not harm people.

5. Americans do not have to worry about clean drinking water because most of our rivers are unpolluted.

ACTIVITIES:

1. Read, Occupational Outlook Handbook, pages 48 through 54.

2. Obtain information on conservation careers from, U. S. Department of Agriculture.

3. View film- "The Matter of Time" Encyclopedia Britannica, 1150 Wilmette Avenue, Wilmette, Illinois.

ACTIVITIES: (continued)

4. Present a mock trail in which an individual has broken a conservation law (Through cooperation with the Local District Attorney's Office).

5. Make charts indicating labor projections for conservation workers during the next decade.

6. Compare the number of conservation workers for every year from 1960 through 1972.

7. Make class scrap book on current events that are related to conservation.

8. Visit local environmental control center.

9. Write - State Department for information on number and kinds of state employees in various areas of conservation.

10. Interview representatives from the following workers, (forester, Water Quality Technician, and Meteorologist.)

POST-TEST:

Draw a picture of one conservation worker. Explain what he does and why his work is or is not important. Also, explain why you feel that his job will or will not exist in 1985.

ANSWERS TO PRE-TEST:

1. True
2. False
3. False
4. False
5. False

ANSWERS TO POST-TEST:

Teacher will determine whether the child's thoughts reflect the learning activities that have preceeded the post-test.

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Fehr, Howard and Schutt, Veryl. Mathematics In Life. Heath and Company, Boston, pages 295-296.

Focus on Life Science, (7th Grade Text), Chapter 25, Merrill Publishing Company, Columbus, Ohio, 1969.

Kimbrell and Vineyard. Succeeding in the World of Work. McKnight and McKnight Publishing Company, Bloomington, Illinois, 1970.

McDonnell, Leo P. Blueprint Reading and Sketching. Delmar Publishers, Mountainview Avenue, Albany, New York, 1971.

Modern Landscaping. A. B. Morse Company, Barrington, Illinois.

Occupational Outlook Handbook. U. S. Department of Labor, 1972-73.

Pope, Billy and Ramona Emmons. Let's Visit A Mining Company. Taylor Publishing Company, Dallas, Texas, 1971,

Pope, Billy and Ramona Emmons. Let's Visit A Rubber Company, Taylor Publishing Company, Dallas, Texas, 1971.

Pope, Billy and Ramona Emmons. Let's Visit An Oil Company, Taylor Publishing Company, Dallas, Texas, 1971.

Robert, Henry M. Robert's Rules of Order. Scott, Foresman and Company, Chicago, 1951.

Smith, William S. Group Problem-Solving Through Discussion. The Bobbs-Merrill Company, 1965.

Seymour, E. L. The Wise Garden Encyclopedia. Wise and Company, New York.

Zimmerman, Joseph. Low Achiever Motivational Project. Des Moines Public Schools, page 81 - "Scale Drawing."

PAMPHLETS: (Available Free)

Water Pollution and It's Control - Boy Scouts

Forestry Fact Sheet - U. S. Forest Service, Washington, D. C.

Air Pollution - The Facts - National Tuberculosis Association

Air Pollution - Alabama's growing problem - Alabama Department of Public Health

The Soil That Went To Town - U. S. Office of Agriculture

Natural Resources - A Bank Account - U. S. Forest Service

Teaching Conservation through Outdoor Education Areas - U. S. Department of Agriculture - Forest Service

The Air We Breathe - The Garden Club of America - Madison Avenue - New York

Clean Air For Your Community

Water Pollution - Garden Club of America - Conservation Committee - Madison Avenue, New York

Clean Water - A Challenge to the Nation - U. S. Department of Agriculture

Primer on Water - U. S. Geological Association, Washington, D. C.

Forestry Fact Sheet - U. S. Forest Service, Washington, D. C.

Learning and Recycling - Garden Club of America - Madison Avenue, New York

Recycling is Cheaper - U. S. Department of Agriculture, Washington, D. C.

Teaching Soil and Water Conservation, U. S. Department of Agriculture

FILM: (All are available for Free Loan)

Soil Conservation - Harper and Row (8mm sound film)

Forest Conservation - Harper and Row

With Each Breath - National Audubon Society - 5th Avenue, New York

It's Your Decision - Clean Water - Associate Film, Inc. Ridgefield, New Jersey

The Paper Forest - U. S. Forest Service, Washington, D. C.

The Problem with Water is People - McGraw Hill, Text-Film Department - 42nd Street, New York

Let's Clear The Air - U. S. Public Health Service, Atlanta, Georgia

Paradise Polluted - National Audubon Society, 5th Avenue, New York

The following organizations are always willing to help teachers in planning and obtaining materials and films for class activities:

The Nature Conservancy - 1522 K. Street, N.W.
Washington, D. C. 20005

The National Audubon Society - 1130 Fifth Avenue
New York, N.Y. 10028

The Natural Area Council - 145 E. 52nd Street
New York, New York 10022

Natural Science for Youth Foundation - 763 Silvermine Rd.
New Canaan, Conn.
06840

The Garden Club of America - Madison Avenue
New York, New York

THE PAGES THAT FOLLOW LIST OCCUPATIONS
TO WHICH STUDENTS CAN AND SHOULD BE
ORIENTATED THROUGH THE TEACHING OF
THESE MODULES.

CAREER OCCUPATIONS

Life Scientist	Animal	Physical Scientists	Social Scientists
Biological Sciences	Animal Ecologist	Astronomer	Anthropologist
Aquatic Biologist	Animal Husbandryman (scientist)	Chemist	Economist
Biochemist	Entomologist	Analytical Chemist	Geographer
Biophysicist	Pharmacologist	Inorganic Chemist	Mathematician
Biostatistician	Physiologist	Organic Chemist	Political Scientist
Cytologist	Zoologist	Geologist	Psychologist
Geneticist	Biological Sciences, plant	Assayer	Sociologist
Microbiologist	Agriculturist	Geodesist	Statistician
Pathologist	Agronomist	Geophysicist	Writer
Biological Sciences	Botanist	Hydrographer	
	Forest Ecologist	Metallurgist, physical	
		Meteorologist	
		Mineralogist	
		Oceanographer	
		Physicist	
		Seismologist	
		Soil Scientist	

CAREER OCCUPATIONS

Enviromental Educators

Camp Counselor or Recreation Manager

Humanities Teacher

Life Sciences Teacher

Biology Teacher

Physiology Teacher

Physical Sciences Teacher

Chemistry Teacher

Geography Teacher

Geology Teacher

Physics Teacher

Public Health Educator

Social Sciences Teacher

Vocational Teacher

Environmental Engineers

Aeronautical Engineer

Agricultural Engineer

Chemical Engineer

Civil Engineer

Combustion Engineer

Electrical or Power-Plant Engineer

Environmental Engineer

Geological Engineer

Hydraulic Engineer

Industrial Engineer

Industrial Health Engineer (safety and sanitary)

Mechanical Engineer

Mining Engineer

Nuclear Engineer

Environmental Health

Dietician and Nutritionist

Field Health Officer

Industrial Hygienist

Physician

Sanitarian

Toxicologist

Environmental Planners

Architect

Landscape

Urban planner

C A R E E R O C C U P A T I O N S

Natural Resource Managers

Fish and Game Warden

Forester

Oceanographer

Park Ranger-Naturalist

Range Manager

Soil Conservationist

Watershed Manager

Wildlife Manager

Careers in Environmental Technology and Implementations

Inspectors or Monitors

Environmental Inspector

Food and Drug Inspector

Health Inspector or Monitor

Nuclear Inspector (nuclear waste, radiation level, nuclear safety)

Technicians

Biological Technician (biochemical, marine life, botonical, pathological, ornithological)

Environmental Technician (air or water pollution, sanitiation, solid waste, population management)

Food Technician (food research aid, agricultural, animal, wildlife, game, fish, culture, dairy production)

Health Technician (industrial hygenist, health research and laboratory, X-ray)

Horticultural Technician (horicultural, arboricultural, landscape, nursery, pest control)

Land-use Technician (surveyor: urban-city, land-town-planning)

Nuclear Technician (waste, reaiation, health, engineering aide)

Physical Science Technician (electronic, mathematical, astronomical, geological, geophysical, geological, meterogical, engineering, mineralogical, noise)

Resource Conservation Technician (forest, park, recreation, wildlife, soils, etc.)

C A R E E R C C C U P A T I O N S

:ters or Analysts

virorment Tester or Analyst
air, water and soil)

:chanical Tester (test-engine,
:aluator, sound devices, electric
:tor, etc.)

Careers in Environmental Application and Operation

Laborers --- attendants

Gardener (nurseryman, forestry assistant, conservation aide, park maintenance attendent, pest controller, groundskeeper)

Incinerator Plant Attendent

Janitor (waste collector, utility man, building superintendent)

Refuse Collector (garbage, trash, general refuse collection and disposal reclamation men)

Resource Developer (construction miner, quarrying personnel, timberman, logger oil field worker)

Wildlife Attendent (fisheryman, fish hatchery assistant, animal aide, wildlife and conservation research aide)

Operators and Foremen

Dumps and Solid Waste Disposal Operator

Incinerator Foreman

Power Plant Operator (hydroelectric, fossil fuel, nuclear, stationary)

Recycling Operator (salvage laborer, waste disposal, worker, reclamation foreman)

Water or Sewer Systems Foreman (pure water works, purification, waste water, sewage, et

Waste Water Treatment Plant Operator

Water Treatment Plant Operator