Clusters of environmental occupations have been surveyed to identify and describe those occupations at the professional, technical, skilled, semi-skilled, and unskilled levels. The duties and responsibilities, special knowledge, and special skills required are listed for each. Occupational clusters covered are (1) applied biological and agricultural occupations, (2) business, marketing, and management occupations, (3) health occupations, (4) industrially oriented occupations, and (5) personal and public service. Twenty specific jobs have been analyzed in depth and are cross-referenced to the previous listing. They are reprinted with modification from the Illinois Occupational Curriculum Project, Joliet Junior College. The areas investigated are a competency statement, frequency of performance, importance for job entry and job advancement, conditions for application of competency, and criteria that exhibit satisfactory application of the competency. (MS)
EMPLOYMENT OPPORTUNITIES AND JOB ANALYSIS FOR SELECTED ENVIRONMENTAL OCCUPATIONS

THOMAS R. STITT
During the past year, the Professional and Curriculum Development Unit, Division of Vocational and Technical Education for the Board of Vocational Education and Rehabilitation, in cooperation with the Department of Agricultural Industries, School of Agriculture, Southern Illinois University, Carbondale, has funded two environmentally related projects.


The projects operated simultaneously with two major objectives.

1. Develop a program for training students in one of the vocational majors in the field of Environmental Education.

2. In the time available, provide the participants with as much exposure to the proposed program as possible.

As the project developed, the participants began to collect information which they deemed valuable to the prospective teacher in the areas related to "Environment".

Publications include:

a. An Environmental Glossary.

b. An Annotated Bibliography for Environmental Educators.


d. Employment Opportunities and Job Analysis for Selected Environmental Occupations.

e. A Pre-Service Program in Environmental Occupations.
These materials are specifically designed to serve as resource materials for Vocational Teachers who are teaching in Environmental Areas.

Thomas R. Stitt
Project Director
Agricultural Industries Department
PROJECT INFORMATION SHEET

Project Title:

Pre-Service Program in Environmental Occupations, Program Phase, Contract Number MP-3a.

Project Director:

Dr. Thomas R. Stitt, Associate Professor
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Agricultural Industries Department
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Project Participants:

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2. Janice Edwards, Home Economics
3. Doug Patton, Agriculture
4. Roy Swanson, Enterprise
5. Kay Wafer, Home Economics
6. Mary Wietting, Home Economics

Funding Agent:

Professional and Curriculum Development Unit,
Division of Vocational and Technical Education
Board of Vocational Education and Rehabilitation,
State of Illinois in cooperation with Agricultural Industries Department, School of Agriculture,
Southern Illinois University, Carbondale, Illinois.

Project Duration:

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## Applied Biological and Agriculture Occupations

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</table>
I. Applied Biological and Agricultural Occupations

A. Professional and Management Level

1. Air Pollution Control Chief
   (Refer to Personal and Public Service Occupations, management level)

2. Aquatic Biologist
   a) Duties and Responsibilities
      1) Studies the interaction of plants and animals living in water
      2) Studies methods of achieving or maintaining the system's balance
      3) Studies effects of certain pollutants on aquatic life
   b) Special Knowledge
      1) Must have a college degree in biology
      2) Must know how to properly test samples
   c) Special Skills
      1) Must be able to perform proper experiments to obtain information

3. Environmentalist
   (Refer to Industrial Oriented Occupations, professional level)

4. Forest Ecologist
   a) Duties and Responsibilities
      1) Studies environmental factors that affect vegetation
      2) Carries out specialized research with different uses of soil
   b) Special Knowledge
      1) Must have knowledge in forestry disease and soils
      2) Must know proper research methods
   c) Special Skills
      1) Must be able to work various test equipment
      2) Must be able to do research in the proper methods

5. Plant Physiologist
   a) Duties and Responsibilities
      1) Examines environmental conditions on plants
      2) Experiments with light, temperature, and mineral nutrients and their effect on plants
      3) Prepares reports on these physiological experiments
b) Special Knowledge
1) Must have a bachelor's degree in biology
2) Must know how to conduct proper experiments

c) Special Skills
1) Must be able to conduct proper experiments
2) Must be able to operate experimental equipment

6. Sanitarian
DOT 079.118

a) Duties and Responsibilities
1) Plans, develops, and executes environmental health programs
2) Conducts training programs in environmental health
3) Enforces health and sanitation regulations

b) Special Knowledge
1) Bachelor's degree in environmental health
2) Must know federal laws concerning public health

c) Special Skills
1) Must be able to teach
2) Must be able to plan sanitation programs

7. Sanitary Engineer
DOT 065.081

a) Duties and Responsibilities
1) Designs and oversees construction of hygienic projects, such as water works, sewage, and garbage disposals
2) Plans development of watersheds, aqueducts, and rodent control projects

b) Special Knowledge
1) Must have a degree in Engineering
2) Must be aware of environmental health programs

c) Special Skills
1) Must be able to plan projects
2) Must be able to draft facilities needed in the projects

8. Waste Water Plant Supervisor
(Refer to In-Depth Job Analysis Section)

9. Water Maintenance Foreman
(Refer to Business and Management Occupations, management level)
B. Technical Level

1. Air Pollution Control Engineer
(Refer to Personal and Public Service occupations, technical level)

2. Forestry Technician DOT 441.383
   a) Duties and Responsibilities
      1) Plants and protects forest land
      2) Plans harvesting of timber
      3) Protects watersheds and starts control fires
   b) Special Knowledge
      1) Must know how to establish forest practices
      2) Must know forestry principles
   c) Special Skills
      1) Must be able to use lab equipment
      2) Must be able to use various tools

3. General Sanitation Technician
(Refer to Health Occupations, technical level)

4. Public Health Bacteriologist DOT 041.281
   a) Duties and Responsibilities
      1) Conducts experiments to detect harmful or pathogenic bacteria in water and food supply
      2) Controls or eliminates sources of pollution
      3) Cooperates with hospitals in identifying disease-causing micro-organisms
   b) Special Knowledge
      1) Must know how to conduct experiments
      2) Must know how to identify types of bacteria
   c) Special Skills
      1) Must be able to conduct proper experiments

5. Sewage Disposal Engineer
   a) Duties and Responsibilities
      1) Designs and oversees construction of and operation of sewage disposal system
      2) Estimates cost of project and prepares specifications for equipment and materials
   b) Special Knowledge
      1) Must know regulations and principles of sewage disposal
      2) Must have a degree in Engineering
   c) Special Skills
      1) Must have good judgement
      2) Must be able to draft plans
6. **Waste Water Technician**  
(Refer to Personal and Public Service occupations, technical level)

C. **Skilled Level**

1. **Air Analyst**  
   DOT 012.281
   a) **Duties and Responsibilities**
      1) Obtains samples of air around industrial areas
      2) Analyzes sample to determine the amount of suspended foreign particles
      3) Prepares a report of the findings
   b) **Special Knowledge**
      1) Must know federal standards for air pollution
      2) Must know how to operate test equipment
   c) **Special Skills**
      1) Must be able to operate test equipment

2. **Environmental Inspector**
   (Refer to Business and Management Occupations, skilled level)

3. **Food and Drug Inspector**
   (Refer to Business and Management Occupations, skilled level)

4. **Purification Plant Operator**
   (Refer to Health Occupations, skilled level)

5. **Toxicologist**
   (Refer to Health Occupations, skilled level)

6. **Water Pollution Control Inspector**
   (Refer to Business and Management Occupations, skilled level)

D. **Semi-Skilled Level**

1. **Air Pollution Control Aide**
   (Refer to Personal and Public Service Occupations, semi-skilled level)

2. **Biological Aide**
   a) **Duties and Responsibilities**
      1) Assists technicians and others in obtaining data in various field work
      2) Helps personnel operate test equipment
   b) **Special Knowledge**
      1) A general biology background
   c) **Special Skills**
      1) Must be able to operate test equipment
3. Forester Aide
   a) Duties and Responsibilities
      1) Records and reads meter readings
      2) Provides general labor
      3) Performs field inspections
   b) Special Knowledge
      1) None
   c) Special Skills
      1) Must be able to read meters

4. Water Shed Tender
   (Refer to Industrial Oriented Occupations, semi-skilled level)

5. Water Tender
   (Refer to Industrial Oriented Occupations, semi-skilled level)

E. Unskilled Level

1. Water Filter Cleaner
   (Refer to Personal and Public Service Occupations, unskilled level)
<table>
<thead>
<tr>
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<td>Air Analyst</td>
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<td>File Clerk</td>
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<td>Process Engineer</td>
<td>Applied Statistician</td>
<td>Secretary</td>
<td>General Office Clerk</td>
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<td>Director of Environmental Affairs</td>
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<tr>
<td>Landfill Division Manager</td>
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<td>Nuclear Inspector</td>
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<tr>
<td>Manager of the Landscaping Center</td>
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<td>Water Pollution Control Inspector</td>
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<tr>
<td>Mine Foreman</td>
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<td>Office Manager</td>
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<td>Operations Manager</td>
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<td>Recycle Center Supervisor</td>
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</table>
II. Business, Marketing and Management Occupations

A. Professional and Management Level

1. Air Pollution Control Chief
   (Refer to Personal & Public Service Occupations, professional level)

2. Air Pollution Control Director
   (Refer to Personal & Public Service Occupations, professional level)

3. Director of Environmental Affairs
   (Refer to In-Depth Job Analysis Section)

4. General Landfill Manager
   (Refer to In-Depth Job Analysis Section)

5. Incinerator Foreman
   (Refer to Health Occupations, professional level)

6. Landfill Division Manager
   (Refer to In-Depth Job Analysis Section)

7. Manager of Landscaping Center
   (Refer to In-Depth Job Analysis Section)

8. Mine Foreman
   (Refer to Industrial-Oriented Occupations, professional and management level)

9. Office Manager
   (Refer to In-Depth Job Analysis Section)

10. Operations Manager
    (Refer to In-Depth Job Analysis Section)

11. Recycling Center Supervisor
    (Refer to In-Depth Job Analysis Section)

12. Sewage Maintenance Supervisor    DOT 954.782
a) Duties and Responsibilities
   1) Supervises maintenance of equipment and activities of laborers
   2) Gives continuing and special instruction to crew and foreman
   3) Fosters good working conditions
b) Special Knowledge
   1) Must know duties and responsibilities of all employees
   2) Must know how to evaluate the work of others
   3) Must be aware of new advances in the field
c) Special Skills
1) Must be able to operate and repair equipment
2) Must be able to lead subordinates
3) Must be able to stimulate good attitudes

13. Water Maintenance Foreman  DOT 954.782
a) Duties and Responsibilities
   1) Supervises activities of workers and equipment in water treatment plant
   2) Fosters good working conditions
   3) Provides incentives for employees
b) Special Knowledge
   1) Must know duties of employees
   2) Must know equipment operation and maintenance
c) Special Skills
   1) Must be able to get along with employees and notice difficulties in worker relations and working conditions
   2) Must be able to repair and operate equipment
   3) Must be enthusiastic and able to stimulate workers

14. Waste Water Plant Supervisor
   (Refer to In-Depth Job Analysis Section)

B. Technical Level

1. Industrial Health Statistician  DOT 020.188
   a) Duties and Responsibilities
      1) Prepares maps and charts
      2) Provides technical service to individuals and municipalities
      3) Prepares and maintains records
      4) Conducts in-service training programs
   b) Special Knowledge
      1) Must know how to use statistics
      2) Must know how to make records and make maps
   c) Special Skills
      1) Make maps and charts
      2) Perform clerical work
      3) Keep records

2. Process Engineer
   (Refer to In-Depth Job Analysis Section)

C. Skilled Level

1. Air Analyst
   (Refer to Applied Biological Occupations, skilled level)
2. Applied Statistician  DOT 020.188
   a) Duties and Responsibilities
      1) Plans surveys
      2) Interprets analytical findings
      3) Conducts surveys
      4) Compiles data and maintains records
   b) Special Knowledge
      1) Must know how to evaluate and supervise reports
      2) Must know how to conduct proper surveys and compile data
      3) Must know principles of statistics
   c) Special Skills
      1) Must be able to make-up and compile surveys
      2) Must be able to evaluate data

3. Environmental Inspector
   a) Duties and Responsibilities
      1) Determines environmental purity using a variety of mechanical chemical tests
      2) Analyzes and reports on samples and data collected
   b) Special Knowledge
      1) Must know how to conduct tests
      2) Must know regulations that establish standards for environmental contamination
   c) Special Skills
      1) Must be able to conduct tests and write reports

4. Food and Drug Inspector
   (Refer to Health Occupations, skilled level)

5. Industrial Waste Inspector  DOT 168.287
   a) Duties and Responsibilities
      1) Inspects industrial and commercial waste disposal facilities
      2) Investigates source of pollutants in municipal sewage
      3) Compiles written reports of findings and recommends actions needed.
   b) Special Knowledge
      1) Must know how to conduct tests
      2) Must know level of harmful pollutants
      3) Must know federal and state regulations and laws
   c) Special Skills
      1) Must be able to conduct proper tests
      2) Must be able to analyze test results
6. Nuclear Inspector
   a) Duties and Responsibilities
      1) Inspects the plant facilities with various equipment to detect the degree of radiation contamination
      2) Analyzes test results and makes recommendations
   b) Special Knowledge
      1) Must know federal and state regulations and laws
      2) Must know how to conduct tests and use equipment
      3) Must know level of harmful radiation
   c) Special Skills
      1) Must be able to use radiation detectors
      2) Must be able to analyze test results

7. Water Pollution Control Inspector
   (Refer to Personal and Public Service Occupations, skilled level)

D. Semi-Skilled Level

1. Clerk-typist
   a) Duties and Responsibilities
      1) Compiles and types reports
      2) Files records and reports
      3) Sorts and distributes mail
      4) Answers telephone
   b) Special Skills
      1) Must be able to type
      2) Must be able to file properly

2. Secretary
   a) Duties and Responsibilities
      1) Carries out administrative and general office duties
      2) Takes and transcribes dictation
      3) Makes appointments and answers phone
      4) Types and files reports
   b) Special Skills
      1) Must be able to type
      2) Must be able to transcribe dictation

E. Unskilled Level

1. General Office Clerks
   a) Duties and Responsibilities
      1) Copies data
      2) Compiles records and reports
      3) Handles mail and correspondence
      4) Tabulates and posts data in record books
   b) Special Skills
      1) Must know how to operate office machines
      2) Must know how to file properly
2. File Clerks
   a) Duties and Responsibilities
      1) Records and retrieves data and records
      2) Classifies, sorts, and files correspondence
   b) 1) Must be able to read and write
       2) Must know how to file properly
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<tr>
<td>Water Purification Chemist</td>
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</tbody>
</table>
III. Health Occupations

A. Professional Level

1. Environmentalist
   (Refer to Industrial Oriented Occupations, professional level)

2. Incinerator Foreman
   DOT 955.139
   a) Duties and Responsibilities
      1) Primarily concerned with the proper use of equipment to burn refuse
      2) Supervises incinerator operators and clerical personnel
      3) Trains new employees
      4) Inspects and adjusts machinery
      5) Provides written reports on the plant's operation
   b) Special Knowledge
      1) Must know how to operate and adjust equipment
      2) Must know how to teach new employees
      3) Must know how to write proper reports
   c) Special Skills
      1) Must be able to operate machinery
      2) Must be able to instruct new employees

3. Industrial Health Engineer
   DOT 012.188
   a) Duties and Responsibilities
      1) Plans and coordinates industrial health programs
      2) Analyzes and controls conditions contributing to occupational hazards
   b) Special Knowledge
      1) Must know how to test for safe limits of air, noise, and radiation pollution
      2) Must know how to implement control measures
   c) Special Skills
      1) Must be able to conduct tests
      2) Must be able to analyze results
      3) Must be able to implement control measures

4. Physicist, Acoustics
   DOT 023.081
   a) Duties and Responsibilities
      1) Investigates methods of minimizing noise in urban areas
      2) Determines effect of sound on materials and substances as well as physiological and psychological effects on human beings
      3) Conducts research into the phenomena of hearing, sound reproduction, and vibration
b) Special Knowledge
   1) Bachelor's degree in Physics
   2) Graduate training

c) Special Skills
   1) Good memory and imagination
   2) Ability to conduct proper experiments

5. Public Health Bacteriologist DOT 041.281
   a) Duties and Responsibilities
      1) Conducts experiments to detect presence of harmful bacteria in water or food
      2) Controls sources of possible pollution
   b) Special Knowledge
      1) Must know how to identify pollution in water and food supply
      2) Must know how to correct this contamination
   c) Special Skills
      1) Must be able to conduct experiments on samples of food and water

6. Sanitarian
   (Refer to Applied Biological Occupations, professional level)

7. Sanitary Engineer
   (Refer to Applied Biological Occupations, professional level)

8. Sewage Maintenance Supervisor
   (Refer to Business and Management Occupations, professional level)

9. Waste Water Plant Supervisor
   (Refer to In-Depth Job Analysis Section)

10. Water Maintenance Foreman
    (Refer to Industrial Occupations, management level)

B. Technical Level

1. Air Pollution Control Engineer
   (Refer to Personal and Public Service Occupations, technical level)

2. General Environmental Engineer
   (Refer to In-Depth Job Analysis Section)
3. General Sanitation Technician
   a) Duties and Responsibilities
      1) Gives technical advice and assistance in analyzing biological samples and specimens
      2) Writes reports
   b) Special Knowledge
      1) Must know how to analyze samples
      2) Must know how to conduct tests
      3) Must know safe levels of contamination
   c) Special Skills
      1) Must be able to conduct tests
      2) Must be able to analyze results and write reports

4. Health Physicist
   a) Duties and Responsibilities
      1) Directs research in radiation hazards
      2) Conducts monitoring programs to protect plant and laboratory personnel from radiation
      3) Conducts training programs in radiation safety
   b) Special Knowledge
      1) Must know decontamination procedures
      2) Must know inspection standards
      3) Must know safe work methods
      4) Must know radiation limits
   c) Special Skills
      1) Must be able to teach safety classes
      2) Must be able to perform proper radiation tests

5. Industrial Health Statistician
   (Refer to Business and Management Occupations, technical level)

6. Industrial Hygienist
   a) Duties and Responsibilities
      1) Conducts radiation, noise, and air pollution tests in specific areas
      2) Reports findings to the Health Engineer
   b) Special Knowledge
      1) Must know how to conduct the proper tests
   c) Special Skills
      1) Must be able to conduct noise, radiation, and noise pollution tests

7. Industrial Waste Inspector
   (Refer to Industrial Occupations, technical level)

8. Public Health Bacteriologist
   (Refer to Applied Biological Occupations, technical level)

9. Nuclear Engineer
   (Refer to In-Depth Job Analysis Section)
10. Safety Inspector
   a) Duties and Responsibilities
      1) Inspects machinery equipment and working conditions for hazards to workers
      2) Acts to prevent accidents and fires
   b) Special Knowledge
      1) Must know safety standards
      2) Must know proper corrective actions needed to improve safety
   c) Special Skills
      1) Must be able to perform safety tests
      2) Must be able to write reports

11. Station Engineer
    (Refer to Industrial Occupations, technical level)

12. Waste Water Plant Chemist
    (Refer to In-Depth Job Analysis Section)

13. Waste Water Technician
    (Refer to Personal and Public Service Occupations, technical level)

14. Water Pollution Control Technician
    (Refer to Personal and Public Service Occupations, technical level)

15. Water Purification Chemist
    a) Duties and Responsibilities
       1) Performs chemical lab analysis
       2) Identifies sources of contamination
       3) Compiles and evaluates data
    b) Special Knowledge
       1) Chemistry
       2) Sources of water pollution
       3) Must know how to conduct experiments
    c) Special Skills
       1) Must be able to use lab equipment
       2) Must be able to evaluate data

C. Skilled Level

1. Air Pollution Control Inspector
   (Refer to Personal and Public Service Occupations, skilled level)

2. Environmental Inspector
   (Refer to Business and Management Occupations, skilled level)
3. Food and Drug Inspector  DOT\$168.287
   a) Duties and Responsibilities
      1) Inspects establishments where food
         and drugs are manufactured, handled
         or sold
      2) Enforces legal standards of sanitation
      3) Prepares reports of inspections
   b) Special Knowledge
      1) Must know sanitary standard to be met
      2) Must know how to use test equipment
   c) Special Skills
      1) Must be able to work with test equipment

4. Industrial Waste Inspector
   (Refer to Business and Management Occupations, skilled level)

5. Nuclear Inspector
   (Refer to Business and Management Occupations, skilled level)

6. Purification Plant Operator
   a) Duties and Responsibilities
      1) Oversees softening and purifying of
         water in water purification plant
      2) Filters and adds chlorine to water
   b) Special Knowledge
      1) Must know proper amount of chlorine and
         chemicals to be added
      2) Must know how to operate equipment
   c) Special Skills
      1) Must be able to operate equipment

7. Toxicologist
   a) Duties and Responsibilities
      1) Identifies the effects of air and
         water-born agents on the health of
         workers
      2) Prepares reports and recommends methods
         of reducing or eliminating the toxic
         substances
   b) Special Knowledge
      1) Must know how to identify toxic
         substances
      2) Must know proper methods of eliminating
         toxic substances
   c) Special Skills
      1) Must be able to perform analysis on
         substances to determine the content of
         fumes, dust and mist

8. Waste Water Plant Operator
   (Refer to In-Depth Job Analysis Section)
9. Water Pollution Control Inspector  
   (Refer to Personal and Public Service Occupations, skilled level)

10. Water Treatment Plant Operator
    a) Duties and Responsibilities
       1) Operates plant equipment properly
       2) Maintains correct chemical balance in the water
       3) Takes pressure readings and records the data
    b) Special Knowledge
       1) Must know how to operate plant equipment
       2) Must know proper chemical levels in the water

D. Semi-Skilled Level

1. Air Pollution Control Aide  
   (Refer to Personal and Public Service Occupations, semi-skilled level)

2. Clerk Typist  
   (Refer to Business and Management Occupations, semi-skilled level)

3. Secretary  
   (Refer to Business and Management Occupations, semi-skilled level)

4. Waste Disposal Man  
   DOT 955.883
   a) Duties and Responsibilities
      1) Disposes of radioactive equipment and wastes
      2) Constructs concrete coffins for wastes
      3) Burial is then performed at sea or in the ground
      4) Keeps records of all procedures
   b) Special Knowledge
      1) Must know federal laws concerning radioactive waste disposal
      2) Must know how to work with radioactive materials
      3) Must know how to construct coffins
   c) Special Skills
      1) Keep records
      2) Construct coffins
      3) Operate equipment that is used with radioactive substances

E. Unskilled Level

1. File Clerks  
   (Refer to Business and Management Occupations, unskilled level)

2. General Office Clerks  
   (Refer to Business and Management Occupations, unskilled level)
3. Health Field Officer  DOT 168.168  
   a) Duties and Responsibilities  
      1) Locates, advises, and questions persons exposed to communicable disease  
      2) Writes reports  
      3) Advises the people in obtaining treatment from a clinic  
   b) Special Knowledge  
      1) Must know disease effects  
      2) Must know where persons must go for proper treatment  
      3) Special Skills  
         1) Must be able to write reports  

4. Water Filter Cleaner  
   (Refer to Personal and Public Service Occupations, unskilled level)
### Industrial Oriented Occupations

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<th>Skilled</th>
<th>Semi-Skilled</th>
<th>Un-Skilled</th>
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<td>Air Conditioning Mechanic</td>
<td>Air Conditioning Unit Tester</td>
<td>Air Conditioning Mechanic's Helper</td>
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<td>General Landfill Manager</td>
<td>Engineering Technician</td>
<td>Applied Statistician</td>
<td>Compactor Operator</td>
<td>Entry Operator</td>
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<tr>
<td>Industrial Hygiene Physician</td>
<td>General Environmental Engineer</td>
<td>Atomic Fuel Assembler</td>
<td>Mine car Repairman</td>
<td>Oiler</td>
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<td>Industrial Health Engineer</td>
<td>Industrial Hygiene Statistician</td>
<td>Heavy Equipment Operator</td>
<td>Miner</td>
<td>Refuse Collector</td>
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<td>Landfill Division Manager</td>
<td>Industrial Hygiene Engineer</td>
<td>Industrial Waste Inspector</td>
<td>Rock Dust Machine Operator</td>
<td>Water Truck Driver</td>
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<td>Mine Foreman</td>
<td>Industrial X-Ray Operator</td>
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<td>Mining Engineer</td>
<td>Mining Investigator</td>
<td>Shovel &amp; Dragline Operator</td>
<td>Watershed Tender</td>
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<td>Office Manager for Landfill</td>
<td>Nuclear Engineer</td>
<td>Station Operator</td>
<td>Water Tender</td>
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<td>Operations Manager</td>
<td>Process Engineer</td>
<td>Water Meter Repairman</td>
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<td>Sewage Maintenance Supervisor</td>
<td>Radio Instrument Technician</td>
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<td>Water Maintenance Foreman</td>
<td>Station Engineer</td>
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</tr>
</tbody>
</table>
IV. Industrial Oriented Occupations

A. Professional and Management Level

1. Environmentalist DOT 079.118
   a) Duties and Responsibilities
      1) Inspects public facilities which may prove dangerous to the public health
      2) Works with civil defense in planning for emergency disaster aid for floods, tornadoes and earthquakes
      3) Takes and examines samples of water, air and food
   b) Special Knowledge
      1) Must know levels of contaminants which make public facilities unsafe for the public
      2) Must know how to analyze samples
   c) Special Abilities
      1) Must be able to write reports
      2) Must be able to speak at public gatherings

2. General Landfill Manager
   (Refer to In-Depth Job Analysis Section)

3. Industrial Health Engineer
   (Refer to Health Occupations, Professional and Management level)

4. Industrial Hygiene Physician DOT 070.108
   a) Duties and Responsibilities
      1) Treats illnesses and injuries
      2) Observes and studies health and safety hazards in the plant
      3) Makes recommendations and reports on violations of health laws
      4) Gives health and safety lectures
   b) Special Knowledge
      1) Must keep up-to-date on medical knowledge
      2) Must know laws concerning safety in industrial situations
   c) Special Skills
      1) Must be able to give lectures
      2) Must be able to treat injuries and illnesses
      3) Must be able to give medical examinations
5. Landfill Division Manager
(Refer to In-Depth Job Analysis Section)

6. Mine Foreman
DOT 181.168
a) Duties and Responsibilities
1) Supervises and coordinates activities of personnel in one or more mines
2) Inspects mines and reports safety violations
3) Takes measures to improve production and working conditions
b) Special Knowledge
1) Safety regulations
2) Proper mining procedures
3) Employees' responsibilities
c) Special Skills
1) Ability to give orders
2) Ability to lead groups
3) Ability to coordinate activities

7. Mining Engineer
DOT 010.81
a) Duties and Responsibilities
1) Determines location and plans extraction of coal
2) Oversees construction of mines
b) Special Knowledge
1) Must know all mine operations
2) Must know how to plan and develop construction of mine shafts
3) Must know safety and environmental regulations concerning mining
c) Special Skill
1) Must be able to conduct geological explorations
2) Must be able to manage construction operations

8. Office Manager (Landfill)
(Refer to In-Depth Job Analysis Section)

9. Operations Manager
(Refer to In-Depth Job Analysis Section)

10. Sewage Maintenance Supervisor
(Refer to Business and Management Occupations, Management level)

11. Water Maintenance Foreman
(Refer to Business and Management Occupations, Management level)
B. Technical Level

1. Air Conditioning Engineer DOT 007.081
   a) Duties and Responsibilities
      1) Specializes in designing air conditioning equipment
      2) Does research in air conditioning equipment
      3) Advises in construction and manufacturing of air conditioning equipment
   b) Special Knowledge
      1) Must know principles of air conditioning systems
      2) Must know principles of engineering
   c) Special Skills
      1) Must be able to draft designs of equipment

2. Engineering Technician
   (Refer to In-Depth Job Analysis Section)

3. General Environmental Engineer
   (Refer to In-Depth Job Analysis Section)

4. Industrial Health Statistician
   (Refer to Business and Management Occupations, technical level)

5. Industrial Hygiene Engineer DOT 079.188
   a) Duties and Responsibilities
      1) Tries to improve health and safety conditions in industry
      2) Uses highly sophisticated equipment in observing noise, light, and radiation danger in industry
      3) Makes recommendations for improvement
      4) Investigates complaints
   b) Special Knowledge
      1) Knowledge of proper and legal levels of noise, light, and radiation in industries
      2) Must know how to draw information from equipment
   c) Special Skills
      1) Must be able to operate technical equipment
      2) Must be able to make proper recommendations

6. Industrial X-ray Operator DOT 199.381
   a) Duties and Responsibilities
      1) Controls radiograph equipment to take radiographs of metal castings, metal samples, pipes, machinery, and structural members to detect flaws and presence of foreign objects
2) Marks defects and flaws in the film
3) Replaces radioactive isotope source in containers

b) Special Knowledge
1) Must know about radioactive materials
2) Must know how to operate radiograph equipment

c) Special Skills
1) Must be able to operate technical equipment
2) Must be able to analyze findings

7. Mining Investigator
(Petroleum Products)

a) Duties and Responsibilities
1) Investigates earth substances to determine location and extent of mines and mining veins
2) Recommends installation locations and drilling procedures

b) Special Knowledge
1) Must know procedures in petroleum mining
2) Must know how to investigate earth substances

c) Special Skills
1) Must be able to draw conclusions from investigation information

8. Nuclear Engineer
(Refer to In-Depth Job Analysis Section)

9. Process Engineer
(Refer to In-Depth Job Analysis Section)

10. Radioactivity Instrument Maintenance Technician

a) Duties and Responsibilities
1) Repairs electronic equipment such as computers, industrial controls, radar systems, and equipment for handling radioactive materials
2) Tests faulty equipment and replaces parts
3) Maintains records

b) Special Knowledge
1) Must know equipment operation
2) Must know how to recognize malfunctions

c) Special Skills
1) Must be able to work with tools
2) Must be able to repair malfunctions
11. Station Engineer  
   DOT 914.782
   a) Duties and Responsibilities
      1) Operates pumping equipment
      2) Reads flow and pressure meters
      3) Adjusts valves to maintain proper flow rates and pressures
      4) Lubricates and repairs machinery
   b) Special Knowledge
      1) Must know proper flow rates and pressures
      2) Must know how to operate pump line equipment
   c) Special Skills
      1) Must be able to operate equipment
      2) Must be able to repair and maintain equipment

C. Skilled Level

1. Air Conditioning Mechanic  
   DOT 637.281
   a) Duties and Responsibilities
      1) Installs industrial and commercial air conditioning equipment according to blueprints and engineering specifications
      2) Repairs industrial and commercial air conditioning equipment
   b) Special Knowledge
      1) Must know refrigeration principles
      2) Must know function and design of air conditioning units
   c) Special Skills
      1) Must be able to install air conditioning equipment
      2) Must be able to repair and maintain air conditioning equipment

2. Applied Statistician
   (Refer to Business and Management Occupations, skilled level)

3. Atomic Fuel Assembler  
   DOT 710.381
   a) Duties and Responsibilities
      1) Prepares fuel elements for use in nuclear reactors
      2) Strings fuel cells on wire rod using tweezers and safety gloves in a radiation shield box
      3) Inspects, weighs, and records radioactive materials used
b) Special Knowledge  
1) How to work with radioactive materials  
2) How to maintain records  
c) Special Skills  
1) Must be able to string fuel cells

4. Heavy Equipment Operator  
(Refer to In-Depth Job Analysis Section)

5. Industrial Waste Inspector  
(Refer to Business and Management Occupations, skilled level)

6. Mechanic (Strip Mine)  
DOT 620.281  
a) Duties and Responsibilities  
1) Maintains heavy equipment machinery  
2) Repairs heavy equipment machinery  
b) Special Knowledge  
1) Must know principles of diesel and hydraulic equipment  
2) Must know how to repair heavy equipment machinery  
c) Special Skills  
1) Must be able to work with tools to repair machinery

7. Shovel and Dragline Operator (Stripmining)  
a) Duties and Responsibilities  
1) Cleans the overburden (layers of rock and earth) from coal veins  
2) Uses giant heavy equipment  
b) Special Knowledge  
1) Must have knowledge of equipment used  
2) Must know techniques used in removing the overburden  
c) Special Skills  
1) Must be able to operate large machinery  
2) Must be able to maintain large machinery

8. Station Operator  
(Refer to In-Depth Job Analysis Section)

9. Water Meter Repairman  
DOT 710.281  
a) Duties and Responsibilities  
1) Repairs or tests technical equipment  
2) Installs equipment  
3) Reads and records meter and gauge readings  
b) Special Knowledge  
1) Mechanics of technical equipment  
2) How to read meters  
3) Know what the readings signify
c) Special Skills
1) Must be able to repair technical equipment
2) Must record data accurately
3) Must read meters properly

D. Semi-Skilled

1. Air Conditioning Unit Tester  DOT 827.381
   a) Duties and Responsibilities
      1) Tests efficiency of heating and air conditioning equipment under simulated operation situations
      2) Observes and records reading of instruments used to test equipment
      3) Informs supervisor of unusual noise
   b) Special Knowledge
      1) How to take readings
      2) How to set up test equipment
   c) Special Skills
      1) Must be able to set up test equipment
      2) Must be able to record proper test reading

2. Compactor Operator
   (Refer to In-Depth Job Analysis Section)

3. Mine Car Repairman  DOT 622.381
   a) Duties and Responsibilities
      1) Repairs damaged parts of underground mine cars
      2) Examines mine cars for defects
      3) Welds and straightens bolts and rivets parts for mine cars
   b) Special Knowledge
      1) Must know physical make up of mine cars
      2) Must know how to weld and rivet

4. Miner  DOT 850.781
   a) Duties and Responsibilities
      1) Loads blastholds and fires powder charges to loosen earth and rock
      2) Installs timbers or steel retaining structures to prevent cave-ins
      3) Operates equipment to load mine cars
      4) Lays track for mine cars
   b) Special Knowledge
      1) Must know mine safety rules
      2) Must know use of dynamite
   c) Special Skills
      1) Must be able to operate equipment
      2) Must be able to perform hard physical labor.
5. Rock Dust Machine Operator
   a) Duties and Responsibilities
      1) Sprays walls, roofs, and floors of mines with powered limestone
      2) Controls fine coal dust that might explode
   b) Special Knowledge
      1) Must know how to detect level of coal dust in mines
      2) Must know how and where to spray
   c) Special Skills
      1) Must be able to operate spraying equipment

6. Waste Disposal Man
   (Refer to Health Occupations, semi-skilled level)

7. Watershed Tender
   DOT 954.782
   a) Duties and Responsibilities
      1) Controls gates in aqueducts and dams to regulate flow of water to maintain reservoir elevation at a specified level
      2) Monitors meters and gauges and records them in a log
      3) Protects watershed from trespassers and destructive wildlife (burrowing animals)
   b) Special Knowledge
      1) Must know proper water levels
   c) Special Skills
      1) Must be able to operate gates
      2) Must be able to operate monitoring equipment

8. Water Tender
   DOT 599.885
   a) Duties and Responsibilities
      1) Tends pumps to maintain water in boilers
      2) Tests water to determine suitability of water in boiler
      3) Adds chemicals to boiler water
   b) Special Knowledge
      1) How to read equipment
      2) Must know proper water conditions
      3) Must know amount and type of chemicals to be added
   c) Special Skills
      1) Must be able to operate water regulation equipment

E. Unskilled

1. Air Conditioning Mechanic Helper
   DOT 637.884
   a) Duties and Responsibilities
      1) Assists workers engaged in installing, repairing, and servicing industrial and commercial air conditioning systems
2) Cuts, punches, flunge, sheevs and soders sheet metals
   b) Special Knowledge
      1) Must know how to work with hand tools

2. Entry Operator
   (Refer to In-Depth Job Analysis Section)

3. Oiler (Strip Mine)   DOT 699.887
   a) Duties and Responsibilities
      1) Grease and oil heavy stripping equipment
      2) Assist mechanic in machine repair
   b) Special Knowledge
      1) Must know signs of stress on machinery
   c) Special Skills
      1) Ability to follow diagram concerning proper maintenance of equipment

4. Refuse Collection Laborer   DOT 929.887
   a) Duties and Responsibilities
      1) Collects trash and garbage
      2) Operates equipment
      3) Performs heavy physical labor
   b) Special Knowledge
      1) Know how to operate equipment

5. Water Truck Driver Helper   DOT 905.887
   a) Duties and Responsibilities
      1) Assists water truck driver in transporting and handling materials
      2) Load and unload vehicles by hand
   b) Special Knowledge
      none
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<th>Personal and Public Service</th>
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<td><strong>Professional</strong></td>
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<td>Air Pollution Control Director</td>
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<td>Camp Director</td>
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<td>Environmentalist</td>
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<tr>
<td>Forest Ecologist</td>
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<tr>
<td>Incinerator Foreman</td>
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<td>Reclamation Center Director</td>
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<td>Sanitarian</td>
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<td>Water Maintenance Foreman</td>
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<tr>
<td>Water Pollution Control Technician</td>
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<tr>
<td>Water Purification Chemist</td>
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</table>
V. Personal and Public Service Occupations

A. Professional and Management Level
1. Air Pollution Control Chief
   a) Duties and Responsibilities
      1) Calibrates and maintains lab equipment
      2) Collects samples
      3) Performs chemical lab analysis
      4) Reports on lab data
   b) Special Knowledge
      1) Air Pollution
      2) Lab techniques
      3) How to evaluate data
   c) Special Skills
      1) Must be able to maintain and operate equipment

2. Air Pollution Control Director
   a) Duties and Responsibilities
      1) Conducts training programs
      2) Prepares papers for publication
      3) Provides technical assistance and advice to government builders and industry
   b) Special Knowledge
      1) Air pollution
      2) Public relations
   c) Special Skill
      1) Must be able to prepare publications

3. Camp Director
   (Refer to In-Depth Job Analysis Section)

4. Environmentalist
   (Refer to Industrial Occupations, professional level)

5. Forest Ecologist
   (Refer to Applied Biological Occupations, professional level)

6. Incinerator Foreman
   (Refer to Health Occupations, management level)

7. Recreation Center Director
   a) Duties and Responsibilities
      1) Supervises activities
      2) Plans activities of staff
      3) Performs public relations
   b) Special Knowledge
      1) Recreation
      2) Child behavior
      3) Public relations
   c) Special Skills
      1) Must be able to get along with children
8. Sanitarian
(Refer to Applied Biological Occupations, professional level)

9. Water Maintenance Foreman
(Refer to Business and Management Occupations, management level)

B. Technical Level

1. Air Pollution Control Engineer
   a) Duties and Responsibilities
      1) Inspects, adjusts and repairs technical equipment
      2) Instructs and reviews work of inspectors
      3) Tests and develops new products and equipment
      4) Prepares maps, charts and records
   b) Special Knowledge
      1) Must know how to teach
      2) Must know equipment operations and repairs
      3) Must understand principles of air pollution
   c) Special Skills
      1) Must be able to repair equipment
      2) Must be able to test new equipment
      3) Must be able to train new inspectors

2. Forestry Technician
(Refer to Applied Biological Occupations, technical level)

3. General Sanitation Technician
(Refer to In-Depth Job Analysis Section)

4. Home Economist
   a) Duties and Responsibilities
      1) Advise and give technical assistance to individuals
      2) Evaluates data
      3) Educates and gives lectures
   b) Special Knowledge
      1) Food and Milk
      2) Health
      3) Housing
   c) Special Skills
      1) Must be able to teach
      2) Must be able to evaluate products
5. Physic Radiation Technician
   a) Duties and Responsibilities
      1) Research work with radiation equipment
      2) Operates radioactive equipment
      3) Keeps records
   b) Special Knowledge
      1) Radiation research
   c) Special Skills
      1) Must be able to operate equipment

6. Public Health Bacteriologist
   (Refer to Applied Biological Occupations)

7. Station Engineer
   (Refer to Industrial Occupations, technical level)

8. Urban Planning Technician
   a) Duties and Responsibilities
      1) Provides technical assistance and advice for urban development communities
      2) Makes field inspections analysis data and prepares reports
   b) Special Knowledge
      1) Housing and land use
      2) Safety and transportation
   c) Special Skills
      1) Must be able to draft plans
      2) Must be able to plan urban developments with concern for proper land use, housing, transportation and safety

9. Waste Water Plant Chemist
   (Refer to In-Depth Job Analysis Section)

10. Waste Water Technician
    a) Duties and Responsibilities
       1) Examines and analyzes biological samples
       2) Uses highly sophisticated equipment
       3) Keeps records
    b) Special Knowledge
       1) Must have a good chemistry background
       2) Must know how to perform proper tests
    c) Special Skills
       1) Must be able to operate sophisticated equipment
       2) Must be able to properly analyze sample data
11. Water Pollution Control Technologist  
   a) Duties and Responsibilities  
      1) Provides technical assistance and advice for field work  
      2) Prepares equipment for field tests  
      3) Operates equipment and does lab analysis for lakes, rivers and streams  
   b) Special Knowledge  
      1) Must have chemistry training  
      2) Must know how to perform proper tests  
   c) Special Skills  
      1) Must be able to operate test equipment  
      2) Must be able to perform tests  

12. Water Purification Chemist  
   a) Duties and Responsibilities  
      1) Performs chemical and lab analysis of water samples  
      2) Uses highly sophisticated equipment  
      3) Compiles, evaluates, and records data  
      4) Helps identify sources of contamination  
   b) Special Knowledge  
      1) Must know principles of chemistry  
      2) Must know how to test and analyze samples  
   c) Special Skills  
      1) Must be able to operate test equipment  
      2) Must be able to perform tests  

C. Skilled Level  

1. Air Analyst  
   (Refer to Applied Biological Occupations, skilled level)  

2. Air Pollution Control Inspector  
   a) Duties and Responsibilities  
      1) Observes and takes air samples in the field  
      2) Operates equipment and analyzes data  
      3) Prepares reports of findings  
   b) Special Knowledge  
      1) Must know federal and state laws and standards for air pollution  
      2) Must know how to operate equipment  
   c) Special Skills  
      1) Must be able to operate equipment  
      2) Must be able to analyze results  

3. Environmental Inspector  
   (Refer to Business and Management Occupations, skilled level)
4. Fireman  
(Refer to In-Depth Job Analysis Section)

5. Industrial Waste Inspector  
(Refer to Business and Management Occupations, skilled level)

6. Nuclear Inspector  
(Refer to Business and Management Occupations, skilled level)

7. Purification Plant operator  
(Refer to Health Occupations, skilled level)

8. Waste Water Treatment Plant Operator  
(Refer to In-Depth Job Analysis Section)

9. Water Pollution Control Inspector  
   a) Duties and Responsibilities  
      1) Observes and takes biological samples in the field  
      2) Repairs and operates tests equipment  
      3) Maintains records  
   b) Special Knowledge  
      1) Must know how to operate and repair equipment  
      2) Must know principles of water pollution

10. Water Treatment Plant Operator  
(Refer to Health Occupations, skilled level)

D. Semi-Skilled

1. Air Pollution Control Aide  
   a) Duties and Responsibilities  
      1) Helps air pollution control inspector  
      2) Assists in setting up equipment  
      3) Helps in making tests and taking samples  
   b) Special Knowledge  
      1) Should know how to use some equipment  
      2) Should know how to take proper readings  
   c) Special Skills  
      1) Should be able to operate some equipment

2. Biological Aide  
(Refer to Applied Biological Occupations, semi-skilled level)
3. City Planning Aide
   a) Duties and Responsibilities
      1) Assists in obtaining information for the city planners
      2) Makes field inspections and records data
      3) Prepares maps and charts
   b) Special Knowledge
      1) Should know principles of land use
      2) Should know how to prepare charts
   c) Special Skills
      1) Should be able to write reports and provide charts

4. Clerk-Typist
   (Refer to Business and Management Occupations, semi-skilled level)

5. Fire Fighter
   DOT 373.884
   a) Duties and Responsibilities
      1) Uses various equipment to extinguish fires
      2) Rescues people
      3) Provides first aid
   b) Special Knowledge
      1) Must know how to operate equipment properly
      2) Must know first aid

6. Forester Aide
   (Refer to Applied Biological Occupations, semi-skilled level)

7. Secretary
   (Refer to Business and Management Occupations, semi-skilled level)

8. Volunteer Fireman
   (Refer to In-Depth Job Analysis Section)

E. Unskilled Level

1. Entry Operator
   (Refer to In-Depth Job Analysis Section)

2. File Clerks
   (Refer to Business and Management Occupations, unskilled level)

3. General Office Clerks
   (Refer to Business and Management Occupations, unskilled level)
4. Water Filter Cleaner  
   a) Duties and Responsibilities  
      1) Performs physical labor in water plant  
      2) Cleans and maintains water filter  
      3) Keeps water plant clean  
   b) Special Knowledge  
      1) Must know how to clean filters  
   c) Special Skills  
      none
INDEPTH ANALYSIS

1) Camp Director
2) Heavy Equipment Operator
3) Operations Manager (Landfill)
4) Manager of Landscaping Center
5) Office Manager (Landfill)
6) Compactor Operator
7) General Landfill Manager
8) Landfill Division Manager
9) Process Engineer
10) Engineering Technician
11) Director of Environmental Affairs
12) General Environmental Engineer
13) Staff Biologist
14) Nuclear Engineer
15) Station Operator
16) Entry Operator
17) Volunteer Fireman
18) Fireman
19) Waste Water Treatment Plant Operator
20) Recycling Center Supervisor
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<th>Column B</th>
<th>Column C</th>
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<th>Column E</th>
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<td>Importance</td>
<td>Conditions for Application of Competency</td>
<td>Criteria That Exhibit Satisfactory Application of the Competency</td>
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<td>For Job Entry</td>
<td>For Job Advancement</td>
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</tr>
<tr>
<td>Rarely</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hire counselors and all workers.</td>
<td>beginning of camp</td>
<td>X</td>
<td>X</td>
<td>Employee is qualified for position.</td>
</tr>
<tr>
<td>Coordinate all activities.</td>
<td>every day</td>
<td>all of camp</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Keep necessary equipment on hand.</td>
<td>when necessary</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Set up each type of program with a specialist.</td>
<td>when necessary</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Supervise daily programs.</td>
<td>every day</td>
<td>all of camp</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

E - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College DVTE
<table>
<thead>
<tr>
<th>Competency Statement</th>
<th>Frequency of Performance</th>
<th>Importance</th>
<th>Conditions for Application of Competency</th>
<th>Criteria That Exhibit Satisfactory Application of the Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hauls earth onto waste.</td>
<td>Every day, frequently</td>
<td>X</td>
<td>Uses heavy equipment.</td>
<td>Enough earth hauled.</td>
</tr>
<tr>
<td>Grades earth cover</td>
<td>Every day, frequently</td>
<td>X</td>
<td>Uses heavy equipment.</td>
<td>Proper grade.</td>
</tr>
</tbody>
</table>

E. - Essential; D. - Desirable; U. - Unnecessary; NS. - Not Sure
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Supervises mechanics.</td>
<td>Frequently</td>
<td>X</td>
<td></td>
<td>Machinery in good repair.</td>
</tr>
<tr>
<td>Makes out daily report.</td>
<td>Daily</td>
<td>X</td>
<td></td>
<td>Completion of report on time.</td>
</tr>
<tr>
<td>Trains equipment operators</td>
<td>Frequently</td>
<td>X</td>
<td>Uses heavy equipment</td>
<td>Trained operators.</td>
</tr>
<tr>
<td>Hires and fires</td>
<td>Daily</td>
<td>X</td>
<td></td>
<td>Good personnel.</td>
</tr>
<tr>
<td>Sees if roads need grading.</td>
<td>Frequently</td>
<td>X</td>
<td></td>
<td>Propelling graded roads</td>
</tr>
<tr>
<td>Oversees entire operation.</td>
<td>Daily</td>
<td>X</td>
<td>Smoothly - run and profitable operation.</td>
<td></td>
</tr>
</tbody>
</table>

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</tr>
</thead>
<tbody>
<tr>
<td>Estimates work needed.</td>
<td>Every Day</td>
<td>X</td>
<td>In the field.</td>
<td>Correct estimate. Satisfied customers.</td>
</tr>
<tr>
<td>Draws plans.</td>
<td>Frequently</td>
<td>X</td>
<td>Drawing materials.</td>
<td>Accurate plans.</td>
</tr>
<tr>
<td>Orders nursery stock.</td>
<td>Frequently</td>
<td>X</td>
<td>Uses catalogs.</td>
<td>Fulfills needs of center.</td>
</tr>
<tr>
<td>Waits on customers.</td>
<td>Daily</td>
<td>X</td>
<td>Person-to-person selling.</td>
<td>Sale or satisfied customer.</td>
</tr>
<tr>
<td>Hires and fires.</td>
<td>Daily</td>
<td>X</td>
<td></td>
<td>Keeps good staff.</td>
</tr>
</tbody>
</table>

E. - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE
**COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET**

**Prepared by:** Mary Wietting  
**Date:** 3/73  
**Job Title:** Office Managers  
**Level:** Management  
**Cluster:** Industrial Oriented  
**DOT. No.:** (Landfill) E.P.A. Bracket  
**Refuse Disposal**

<table>
<thead>
<tr>
<th>Column A</th>
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<td>Frequency of Performance</td>
<td>Importance</td>
<td>Conditions for Application of Competency</td>
<td>Criteria That Exhibit Satisfactory Application of the Competency</td>
</tr>
<tr>
<td>Takes care of accounts receivable.</td>
<td>Every day</td>
<td>X</td>
<td>X</td>
<td>Book work.</td>
</tr>
<tr>
<td>Sees that customers pay bills.</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Mail, telephone, direct contact. Payment of all bills.</td>
</tr>
<tr>
<td>Handles billing.</td>
<td>Every day</td>
<td>X</td>
<td>X</td>
<td>In office. Sends out all bills.</td>
</tr>
<tr>
<td>Keeps daily records.</td>
<td>Daily</td>
<td>X</td>
<td>X</td>
<td>Bookkeeping. Accurate records.</td>
</tr>
</tbody>
</table>

E. - Essential; D - Desirable; U - Unnecessary; NS - Not Sure  
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</thead>
<tbody>
<tr>
<td>Levels refuse.</td>
<td>Every day</td>
<td>X</td>
<td>X</td>
<td>Uses bulldozer. Properly leveled refuse.</td>
</tr>
<tr>
<td>Compacts refuse.</td>
<td>Every day</td>
<td>X</td>
<td>X</td>
<td>Uses compactor Corrects density of refuse.</td>
</tr>
</tbody>
</table>

E - Essential; D - Desirable; U - Unnecessary; NS - Not Sure
**COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET**

Prepared by: Mary Wietting

Date: 3/73

Job Title: General Manager (Landfill)

DOT. No. ________________________________

Cluster: Industrial Oriented

Level: Management

E.P.A. Bracket: Refuse Disposal

(Salary - $22,000)

<table>
<thead>
<tr>
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<td>Criteria That Exhibit Satisfactory Application of the Competency</td>
</tr>
<tr>
<td>Every Day</td>
<td>Frequently</td>
<td>No. of Times Per Week, Day, Year or Month</td>
<td>For Job Entry</td>
<td>For Job Advancement</td>
</tr>
<tr>
<td>Rarely</td>
<td>E</td>
<td>D</td>
<td>U</td>
<td>NS</td>
</tr>
<tr>
<td>Gives lectures.</td>
<td>Frequently</td>
<td>12 a year</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sets up operational plans.</td>
<td>Frequently</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fills out monthly reports.</td>
<td>Frequently</td>
<td>12 a year</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Purchases equipment.</td>
<td>Rarely</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sees that the landfill meets requirements of state and local E.P.A.</td>
<td>Frequently</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

E - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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<tr>
<td></td>
<td>Every Day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequently</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rarely</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No. of Times Per Week, Day, Year or Month</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>X For Job Entry</td>
<td>X For Job Advancement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gives lectures to public interest groups and students</td>
<td>Frequently 10-12 times @ year</td>
<td>X</td>
<td>X</td>
<td>Going out to areas who request lectures.</td>
</tr>
<tr>
<td>Fills out monthly reports on operations.</td>
<td>Frequently 12 @ year</td>
<td>X</td>
<td>X</td>
<td>Adequate and accurate reports done on time.</td>
</tr>
<tr>
<td>Hires and fires employees.</td>
<td>Rarely 4 times yearly</td>
<td>X</td>
<td>X</td>
<td>Hires good employees. Dismisses poor ones.</td>
</tr>
<tr>
<td>On-the-job training of new employees.</td>
<td>Rarely 4 times yearly</td>
<td>X</td>
<td>X</td>
<td>Training in the field.</td>
</tr>
<tr>
<td>Propose innovative ideas.</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Initiation or changes in programs.</td>
</tr>
</tbody>
</table>

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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<td>Frequency of Performance</td>
<td>Importance</td>
<td>Conditions for Application of Competency</td>
<td>Criteria That</td>
</tr>
<tr>
<td>Every Day</td>
<td>Frequently</td>
<td>No. of Times Per Week, Day, Year or Month</td>
<td>For Job Entry</td>
<td>For Job Advancement</td>
</tr>
<tr>
<td>Directs the burning of coals and steel in large plants. Average size plant burns 10,000 tons of coal and steel daily. Control safety of equipment and fellow workers. Must have knowledge of burning in suspension.</td>
<td>All</td>
<td>Every day.</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

E - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE
COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting  Date: 3/73  Job Title: Engineering Technician  DOT. No. 
Cluster: Industrial Oriented  Level: Technical  E.P.A. Bracket: Land Pollution and Refuse Disposal

(Salary: $900 month)

<table>
<thead>
<tr>
<th>Competency Statement</th>
<th>Column B</th>
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<th>Column D</th>
<th>Column E</th>
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<tbody>
<tr>
<td></td>
<td>Frequency of Performance</td>
<td>Importance</td>
<td>Conditions for Application of Competency</td>
<td>Criteria That Exhibit Satisfactory Application of the Competency</td>
</tr>
<tr>
<td></td>
<td>Every Day</td>
<td>Frequently</td>
<td>Rarely</td>
<td>No. of Times</td>
</tr>
<tr>
<td>Draws plans for offices and garages.</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Uses architectural design equipment.</td>
</tr>
<tr>
<td>Supervises construction.</td>
<td>Rarely</td>
<td>X</td>
<td>X</td>
<td>In the field.</td>
</tr>
<tr>
<td>Selects different building materials</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Uses various catalogues.</td>
</tr>
<tr>
<td>Surveys buildings sites.</td>
<td>Rarely</td>
<td>X</td>
<td>X</td>
<td>In the field with surveying equipment.</td>
</tr>
</tbody>
</table>

E - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE
## Competency Identification and Analysis Worksheet

**Prepared by:** Mary Wietting  
**Date:** 3/73  
**Job Title:** Director of Environmental Affairs  
**Cluster:** Industrial Oriented  
**Level:** Management  
**E.P.A. Bracket:** (Electricity)

<table>
<thead>
<tr>
<th>Column A</th>
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<tbody>
<tr>
<td><strong>Competency Statement</strong></td>
<td><strong>Frequency of Performance</strong></td>
<td><strong>Importance</strong></td>
<td><strong>Conditions for Application of Competency</strong></td>
<td><strong>Criteria That Exhibit Satisfactory Application of the Competency</strong></td>
</tr>
<tr>
<td>Coordinates preparation of reports.</td>
<td>Every day</td>
<td>X</td>
<td>X</td>
<td>Ability to use prior knowledge and follow guidelines.</td>
</tr>
<tr>
<td>Produce Environmental impact statement.</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Complete requirements of established criteria.</td>
</tr>
<tr>
<td>Prepares application for permits</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Must fill out application correctly.</td>
</tr>
</tbody>
</table>

**Conditions for Application of Competency**
- EDU NS
- EDU NS

**Criteria That Exhibit Satisfactory Application of the Competency**
- Completion of reports.
- Completion and acceptance of statement.
- Completion of permit application.

*E. - Essential; D - Desirable; U - Unnecessary; NS - Not Sure*  

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<th>Conditions for Application of Competency</th>
<th>Criteria That Exhibit Satisfactory Application of the Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepares testimony for use in court cases.</td>
<td>Rarely</td>
<td>X</td>
<td>X</td>
<td>Attendance at court.</td>
</tr>
<tr>
<td>Establishes monitoring programs.</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Successful establishment of program.</td>
</tr>
<tr>
<td>Directs new trainees</td>
<td>Rarely</td>
<td>X</td>
<td>X</td>
<td>Answers all questions.</td>
</tr>
<tr>
<td>Divides work among assistants.</td>
<td>Every day</td>
<td>X</td>
<td>X</td>
<td>Completion of all projects.</td>
</tr>
</tbody>
</table>

E. - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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<th>Criteria That Exhibit Satisfactory Application of the Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Works with consultants to do new studies.</td>
<td>Frequently</td>
<td>X</td>
<td></td>
<td>Initiation of new research.</td>
</tr>
<tr>
<td>Makes up study plans.</td>
<td>Frequently</td>
<td>X</td>
<td></td>
<td>Completion of plans.</td>
</tr>
<tr>
<td>Sets up file system.</td>
<td>Rarely</td>
<td>X</td>
<td></td>
<td>Uses filing equipment available.</td>
</tr>
<tr>
<td>Makes speeches to public interest groups.</td>
<td>Frequently</td>
<td>12 times a year</td>
<td>X</td>
<td>Completion of effective system.</td>
</tr>
<tr>
<td>Teaches course to industrial workers.</td>
<td>Frequently</td>
<td>X</td>
<td></td>
<td>Goes where he is invited.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Completion of acceptable speech.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In classroom skill.</td>
</tr>
</tbody>
</table>

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure
## COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

**Prepared by:** Mary Wietting  
**Date:** 3/73  
**Job Title:** Nuclear Engineer  
**Level:** Technical  
**Cluster:** Industrial Oriented  
**E.P.A. Bracket:** Atomic Radiation

### Cluster Industrial Oriented  
($1,000 @ month to start)  

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record keeping</td>
<td>Daily</td>
<td>X</td>
<td>X</td>
<td>Well kept records.</td>
</tr>
<tr>
<td>Trains entry operators.</td>
<td>Frequently</td>
<td>X</td>
<td>X</td>
<td>Well-trained operators.</td>
</tr>
<tr>
<td>Inspects emission systems.</td>
<td>Daily</td>
<td>X</td>
<td>X</td>
<td>Must wear radiation proof clothing.</td>
</tr>
</tbody>
</table>

- E. - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE
## COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

**Prepared by:** Mary Wietting  
**Date:** 3/73  
**Job Title:** Station Operator  
**Cluster:** Industrial Oriented  
**Level:** Technical  
**E.P.A. Bracket:** Atomic Radiation

**($6.00 @ hr)**

<table>
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<td>Importance</td>
<td>Conditions for Application of Competency</td>
<td>Criteria That Exhibit Satisfactory Application of the Competency</td>
</tr>
<tr>
<td>Every Day</td>
<td>Frequently</td>
<td>Rarely</td>
<td>No. of Times Per Week, Day, Year or Month</td>
<td>For Job Entry</td>
</tr>
</tbody>
</table>

| Keeps records. | Daily | X | X | Proper records. |
| Assists engineer. | Daily | X | X | In radioactive surroundings must wear special clothing. |
| | | | | Carries out work properly. |

E - Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE
## COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

**Prepared by:** Mary Wietting  
**Date:** 3/73  
**Job Title:** Entry Operator  
**Cluster:** Industrial Oriented  
**Level:** Unskilled  
**E.P.A. Bracket:** Atomic Radiation  
**DOT. No.:**

### Every Day

<table>
<thead>
<tr>
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<th>Conditions for Application of Competency</th>
<th>Criteria That Exhibit Satisfactory Application of the Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every Day</td>
<td>Daily</td>
<td>X</td>
<td>X</td>
<td>Proper records.</td>
</tr>
<tr>
<td>Frequent</td>
<td>Daily</td>
<td>X</td>
<td>X</td>
<td>Follow directions.</td>
</tr>
<tr>
<td>Rarely</td>
<td>Daily</td>
<td>X</td>
<td>X</td>
<td>Must wear radiation-proof clothing.</td>
</tr>
</tbody>
</table>

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

**COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET**

Prepared by: **Kay Wafer**  
Date: **4/1/73**  
Job Title: **Volunteer Fireman**  
Cluster: **Personal and Public Service**  
Level: **Semi-skilled**  
E.P.A. Bracket:  

<table>
<thead>
<tr>
<th>Competency Statement</th>
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<th>Conditions for Application of Competency</th>
<th>Criteria That Exhibit Satisfactory Application of the Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>On call at all times except when he is at work.</td>
<td>All the time.</td>
<td>X</td>
<td>X</td>
<td>Has radio receiver.</td>
</tr>
<tr>
<td>Must come to the fire from wherever he is.</td>
<td>When there is a fire.</td>
<td>X</td>
<td>X</td>
<td>Is assigned to go directly to fire or to fire station to drive a truck.</td>
</tr>
<tr>
<td>Must be able to operate all equipment and drive all vehicles.</td>
<td>All the time.</td>
<td>X</td>
<td>X</td>
<td>Is specially trained for all equipment and vehicle operation.</td>
</tr>
<tr>
<td>Be able to perform first aid.</td>
<td>All the time.</td>
<td>X</td>
<td>X</td>
<td>Has special training from teacher certified by Red Cross.</td>
</tr>
</tbody>
</table>

**E.** - Essential; **D.** - Desirable; **U.** - Unnecessary; **NS.** - Not Sure

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<table>
<thead>
<tr>
<th>Competency Statement</th>
<th>Frequency of Performance</th>
<th>Importance</th>
<th>Conditions for Application of Competency</th>
<th>Criteria That Exhibit Satisfactory Application of the Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeps records.</td>
<td>Every day</td>
<td>X</td>
<td>Activities on the job.</td>
<td>Recorded important happenings.</td>
</tr>
<tr>
<td>Writes reports on each fire and sends them to state office.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notifies volunteer firemen when there is a fire.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Be able to perform first aid.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keeps equipment clean and in working condition.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDUNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDUS</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>NS</td>
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## COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

**Prepared by:** Kay Wafer  
**Date:** 3/27/73  
**Job Title:** Waste Water Treatment Plant Operator  
**DOT No.:**  
**Cluster:** Personal and Public Service  
**Level:** Skilled  
**E.P.A. Bracket:** Public Water Supply

### Column A: Competency Statement

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>I. Maintenance - must keep equipment and machines in working condition.</td>
<td>Continuously</td>
<td>X</td>
<td></td>
<td>Repairs items or has repaired. Prevents necessity of repairs when able.</td>
</tr>
<tr>
<td>II. Cleaning - keeps machines, equipment, building, and area clean and orderly</td>
<td>Daily or as necessary</td>
<td>X</td>
<td></td>
<td>Area in good order and clean.</td>
</tr>
<tr>
<td>III. Control of waste water that comes through:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes
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<th>Column D</th>
<th>Column E</th>
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<td>Criteria That Exhibit Satisfactory Application of the Competency</td>
</tr>
<tr>
<td>a) Has knowledge of how to control and treat waste water.</td>
<td>Continuously</td>
<td>X</td>
<td></td>
<td>Studies manual of instruction.</td>
</tr>
<tr>
<td>b) Makes sure pumps and barrels work properly.</td>
<td>Continuously</td>
<td>X</td>
<td></td>
<td>On-the-job training of their operation.</td>
</tr>
<tr>
<td>c) Lab analysis of water sample to keep bacteria count correct</td>
<td>Frequently</td>
<td>At least once a week</td>
<td>X</td>
<td>Several special instruments are used.</td>
</tr>
</tbody>
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1. Uses equipment to analyze
2. Uses given standards to measure bacteria count.

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## Waste Water Treatment Plant Operator

### DOT. No. (Continuous)

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<td>Conditions for Application of Competency</td>
<td>Criteria That Exhibit Satisfactory Application of the Competency</td>
</tr>
<tr>
<td><strong>Every Day</strong></td>
<td><strong>Frequently</strong></td>
<td><strong>Rarely</strong></td>
<td><strong>No. of Times</strong></td>
<td><strong>Per Week, Day, Year or Month</strong></td>
</tr>
<tr>
<td>IV. Sees that solids are properly stored in tanks.</td>
<td>Continuously</td>
<td>X</td>
<td>X</td>
<td>Checks flow through pipe.</td>
</tr>
<tr>
<td>V. Knows and applies safety procedures.</td>
<td>Continuously</td>
<td>X</td>
<td>X</td>
<td>Prevents physical injuries, inflections, can detect noxious gases.</td>
</tr>
<tr>
<td>VI. Keeps records of lab tests.</td>
<td>Frequently</td>
<td>At least once a week</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>VII. Submits reports to EPA.</td>
<td>As requested.</td>
<td></td>
<td>X</td>
<td>X</td>
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<tr>
<td>Open and close the recycling center.</td>
<td>Every Day</td>
<td>X</td>
<td>Apply for the job at the recycling center.</td>
<td>Smooth running of center, clean center picking up all unused refuse.</td>
</tr>
<tr>
<td>Supervise the volunteer workers.</td>
<td>Frequently</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separate material by color codes.</td>
<td>Rarely</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control the volume of materials. Run aids in newspapers for volunteer workers and materials as needed.</td>
<td>No. of Times Per Week, Day, Year or Month</td>
<td></td>
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