

Technical Assistance Guide

Job Descriptions and Skills Required for Public Service/Transitional Jobs: Defining and Measuring Basic Workplace Skills

by John Pawasarat and Lois M. Quinn, University of Wisconsin-Milwaukee Employment and Training Institute, 2010

This technical assistance guide is designed as a resource for local governments and community agencies developing public service/transitional jobs programs to engage workers on layoff or unable to find employment during the current recessionary period. It draws upon successful work relief programs developed in Milwaukee County in prior decades along with job and skill descriptions developed for programs considered during the 1990s.

The emphasis of the TAG is on identifying steps communities can take to move quickly into job creation, drawing upon the considerable federal and state resources already available and in the public domain. The focus is on JOB CREATION and development of clear expectations of each worker's job responsibilities, basic skills required, transferable skills gained on the job, and the potential for non-subsidized employment after the recession. Presented below are tested workforce skill data models, which can be easily updated.

Contents

I. Community Service Job Descriptions, Skill Requirements, Basic Skills and Occupational Outlooks: A Four-Step Model	2
II. Why Reinvent the Wheel? 2010 Resources Available Online	7
O*NET	7
DOL Occupational Outlook Handbook	8
Transferable Workplace Job Skills (SCANS)	9
Future Job Demand: National and State Estimates	10
Job Openings Survey	11
III. Creating Quality Jobs: Milwaukee County's Community Service History	13
Appendix A: O*NET Detailed Report Sample	
Appendix B: DOL Occupational Outlook Handbook Job Description Sample	
Appendix C: SCANS Job Skills Inventory Form	

For additional information, see the University of Wisconsin-Milwaukee Employment and Training Institute website at www.eti.uwm.edu.

I. Community Service Job Descriptions, Skill Requirements, Transferable Skills, and Occupational Outlooks: A Four-Step Model

In 1995 the Employment and Training Institute prepared a report on **Job Descriptions, SCANS Skills, Basic Skills, and Occupational Outlooks for Community Service Jobs**, which provided an outline for implementing community service jobs considered to offer value for local governments and non-profit agencies. Given the healthy economy and political considerations at the time when AFDC and Milwaukee County work relief programs were eliminated in the late 1990s, it was not deemed necessary to develop widespread public sector employment for those unable to find private-sector jobs. With today's jobless recovery, 12% unemployment rate in the City of Milwaukee, and 25 to 1 job gap (between unemployed job seekers and available full-time openings) in inner city Milwaukee neighborhoods, renewed interest has developed in creating temporary community service jobs for laid-off and unemployed workers. The 1995 report provides materials that can be adapted for use in planning public service jobs in 2010. A four-step model was developed to identify appropriate jobs and to delineate the skills to be mastered on each job title. This model remains applicable for today's public jobs creation programs. See sample below for asbestos removal workers.

1. Analyze and categorize each position into an appropriate job title with defined duties.
2. Identify the basic skill requirements for the position.
3. Identify the workplace skills to be developed through the job.
4. Collect current and projected labor market data on the job category and related occupations.

The 1995 report identified 57 jobs that could contribute value to the community, had clearly defined duties and skill sets, and showed potential for helping workers develop skills for fulltime employment. The analysis for these jobs is posted on the ETI website in two parts. Part One (i.e., accounting clerk to job developer) at www.eti.uwm.edu/reprints/JobDescriptionsPt1.pdf and Part Two at www.eti.uwm.edu/reprints/JobDescriptionsPt2.pdf (kitchen help-yard worker).

Community Service Jobs Identified and Analyzed in 1995:		
Accounting Clerk	Escort	Photographer Helper
Asbestos Removal Worker	Food Service Worker	Physical Fitness Instructor
Assembler	General Office Clerk	Physical Therapy Aide
Automobile Body Repairer	Handlers, Helpers, Laborers	Planning Assistant
Automobile Mechanic	Home Health Aide	Psychiatric Aide
Automobile Wrecker	Housekeeper	Receptionist
Bus Person	Job Developer	Recreation Aide
Carpenter, Maintenance	Kitchen Help	Recreation Leader
Car Wash Attendant	Laboratory Assistant	Security Guard
Cashier	Laborer, Salvage	Sewing Aide
Cleaner	Laundry Aide	Shipping/Receiving Clerk
Clerk-Typist	Lawn Mower	Social Service Aide
Community Organizer	Library Aide	Stock Clerk
Cook Helper	Mail Clerk	Teacher Aide
Data Entry Clerk	Maintenance Helper	Tutor
Day Care Worker	Mental Health Aide	Vehicle Maintenance
Dietary Aide	Messenger	Volunteer Service Organizer
Driver	Nurse Assistant	Waiter/Waitress
Driver Helper	Office Helper	Yard Worker

Application of the Four-Step Model

The 1995 report contains the following 4-step work products for each of 57 community service jobs identified as needed in the community and then appropriate for public job placements. Here is the analysis for the asbestos removal worker job title.

STEP ONE: Analyze and categorize each community service job into appropriate an appropriate job title with defined duties using the United States Department of Labor (DOL) Bureau of Labor Statistics (BLS) Dictionary of Occupational Titles (D.O.T.).

Asbestos Removal Worker

DOT Code:	869.684-082
Job Description:	Removes asbestos from ceilings, walls, beams, boilers, and other structures, following hazardous waste handling guidelines.
Duties:	<p>Assembles scaffolding and seals off work area, using plastic sheeting and duct tape.</p> <p>Positions mobile decontamination unit or portable showers at entrance of work area.</p> <p>Builds connecting walkway between mobile unit or portable showers and work area, using handtools, limber, nails, plastic sheeting, and duct tape.</p> <p>Positions portable air evacuation and filtration system inside work area.</p> <p>Sprays chemical solution over asbestos covered surfaces, using tank with attached hose and nozzle, to soften asbestos.</p> <p>Cuts and scrapes asbestos from surfaces, using knife and scraper. Shovels asbestos into plastic disposal bags and seals bags, using duct tape.</p> <p>Cleans work area of loose asbestos, using vacuum, broom and dust pan.</p> <p>Places asbestos in disposal bags and seals bags, using duct tape.</p> <p>Dismantles scaffolding and temporary walkway, using handtools, and places plastic sheeting and disposal bags into transport bags. Seals bags, using duct tape, and loads bags into truck.</p>
Alternate Titles:	Asphalt-plant worker, asphalt raker, backer-up, bell-hole digger, brick cleaner.
GOE:	05.10.01 STRENGTH: H GED: R3 M2 L2

STEP TWO: Identify the basic skill requirements for the position. The DOL has created very useful schematics for skills required for thousands of jobs, which can be applied to the positions to be created.

BASIC SKILL REQUIREMENTS	Asbestos Removal Worker
Reasoning Development:	Apply common sense understanding to carry out instructions furnished in written, oral, or diagrammatic form. Deal with problems involving several concrete variables in or from standardized situations.
Mathematical Development:	Add, subtract, multiply, and divide all units of measure. Perform the four operations with like common and decimal fractions. Compute ratio, rate, and percent. Draw and interpret bar graphs. Perform arithmetic operations involving all American monetary units.
Language development:	<p><u>Reading:</u> Passive vocabulary of 5,000-6,000 words. Ability to read at rate of 190-215 words per minute. (Reading level = ability to read adventure stories and comic books, looking up unfamiliar words in dictionary for meaning, spelling, and pronunciation; i.e., ability to read instructions for assembling model cars and airplanes.)</p> <p><u>Writing:</u> Write compound and complex sentences, using cursive style, proper end punctuation, and employing adjectives and adverbs.</p> <p><u>Speaking:</u> Speak clearly and distinctly with appropriate pauses and emphasis, correct pronunciation, variations in word order, using present, perfect, and future tenses.</p>
Estimated overall strength requirements of job:	heavy work
Typical time required to learn job skills:	Anything beyond short demonstration up to and including 1 month.
Asbestos Removal Worker GOE: 05.10.01 STRENGTH: H GED: R3 M2 L2 SVP:2	

STEP THREE: Identify the transferable workplace skills to be developed through the job. One of the best models identifying workforce skills was developed by the DOL Secretary's Commission on Achieving Necessary Skills (SCANS) project completed in 1992 .

SCAN SKILLS TO BE DEVELOPED

Asbestos Removal Worker

C9 Participates as a Member of a Team - Works cooperatively with others and contributes to group with ideas, suggestions, and effort. Demonstrating competence in participating as a member of a team includes doing own share of tasks necessary to complete a project; encouraging team members by listening and building on strengths; resolving differences; taking personal responsibility for accomplishing goals; and responsibly challenging existing procedures.

C1 Allocates Time - Selects relevant, goal-related activities, ranks them in order of importance, allocates time to activities, and understands, prepares, and follows schedules. Competent performance in managing time includes properly identifying tasks to be completed; developing and following an effective, workable schedule; time to complete tasks, time available for completion, and task deadlines; and avoiding wasting time.

C19 Applies Technology to Task - Understands proper procedures for setting up and operating machines. Demonstrating competence in how to apply technology to task includes understanding how machines operate; setting up machines; and accurately interpreting machine output.

C3 Allocates Material and Facility Resources - Acquires, stores, and distributes materials, supplies, parts, equipment, space, or final products in order to make the best use of them. Competent performance in managing material and facility resources includes safely and efficiently transporting or storing materials, maintaining them in good condition; and distributing them to the end user.

C16 Monitors and Corrects Performance - Diagnoses deviations in the function of a system/organization, and takes necessary action to correct performance. Demonstrating competence in monitoring and correcting performance includes gathering information; detecting deviations; troubleshooting; and making changes to ensure quality of product.

STEP FOUR: Collect current and projected labor market data on the job category from the regional job openings survey, U.S. Census EEO databases, state Department of Workforce Development labor force projections, and U.S. labor force projection.

CURRENT AND PROJECTED LABOR MARKET

Asbestos Removal Worker

Milwaukee Metro Area Job Openings, ETI/SSRF Employer Survey, May 1995:

<u>Job Title</u>	<u>Full-Time Openings</u>	<u>Part-Time Openings</u>

Number of Workers in the Milwaukee Metropolitan Labor Force, U.S. Census:

<u>Job Title</u>	<u>Employment:</u>		<u>Change, 1980-1990:</u>	
	<u>1980</u>	<u>1990</u>	<u>Number</u>	<u>Percent</u>
Insulation workers	199	450	251	126.1%

DILHR Labor Force Projections for Milwaukee County:

<u>Job Title</u>	<u>Employment</u>		<u>Change, 1988-2000:</u>		<u>Average Annual Openings:</u>	
	<u>1988</u>	<u>2000</u>	<u>Number</u>	<u>Percent</u>	<u>Growth</u>	<u>Separations</u>
Insulation workers	210	195	(15)	(7.1%)	(1)	2

DILHR Labor Force Projections for the State of Wisconsin:

<u>Job Title</u>	<u>Employment</u>		<u>Change, 1992-2005:</u>		<u>Average Annual Openings:</u>	
	<u>1992</u>	<u>2005</u>	<u>Number</u>	<u>Percent</u>	<u>Growth</u>	<u>Separations</u>
Insulation workers	1,420	1,480	70	4.9%	5	53

National Job Outlook:

Employment of insulation workers is expected to grow much faster than the average for all occupations through the year 2005, reflecting the demand for insulation associated with new construction and renovation as well as the demand for asbestos removal in existing structures. Renovation and retrofitting work in existing structures will increase demand. Asbestos removal will provide many jobs for insulation workers, not only because insulation workers often remove asbestos, but because they replace it with another insulating material. Despite this growth in demand, replacement needs will account for most job openings. This occupation has the highest turnover of all the construction trades. Since there are no strict training requirements for entry, many people with limited skills work as insulation workers for a short time and then move on to other types of work, creating many job openings.

II. Why Reinvent the Wheel? 2010 DOL and DWD Resources Available Online

Two excellent resources are available at no cost from federally funded projects that conducted extensive research on job titles and occupational areas. We recommend using these resources directly and modifying them for your job sites. You'll have a much better idea of your work expectations and save money on consultants (who specialize in "repackaging" DOL-supported research already in the public domain). The [Dictionary of Occupational Titles](#) (D.O.T.) was last revised by the Department of Labor in 1991 (and is still online for reference at www.oalj.dol.gov/libdot.htm). Its replacement, O*NET, has most of the information you'll need to define job categories for your work programs.

O*NET (the Occupational Information Network) was developed under sponsorship of the U.S. Department of Labor Employment and Training Administration and provides detailed descriptions of occupations online at <http://online.onetcenter.org>. O*NET provides a report for each occupation providing lists of tasks usually performed on the job, tools and technology used on the job, knowledge required, skills required, abilities used, work activities, work context, education requirements, typical wages, and occupational outlook. The detailed reports for each occupation can be modified for the specific work anticipated in the local community. See Appendix A for an example of the data provided for hazardous materials removal workers..

The screenshot displays the O*NET Code Connector interface for the occupation Hazardous Materials Removal Workers (47-4041.00). The page is organized into several columns and sections:

- O*NET-SOC Description:** Identify, remove, pack, transport, or dispose of hazardous materials, including asbestos, lead-based paint, waste oil, fuel, transmission fluid, radioactive materials, contaminated soil, etc. Specialized training and certification in hazardous materials handling or a confined entry permit are generally required. May operate earth-moving equipment or trucks.
- Sample of Reported Job Titles:**

Asbestos Abatement Worker	Hazmat Technician (Hazardous Materials Technician)
Decontamination / Decommissioning Operator (D & D Operator)	Sampler
Radiological Control and Safety Technician	Site Worker
Waste Handling Technician	Nuclear Waste Handler
Field Technician	
- SOC Occupation Groups:**
 - 47-0000 [Construction and Extraction Occupations](#)
 - 47-4000 [Other Construction and Related Workers](#)
 - 47-4040 [Hazardous Materials Removal Workers](#)
 - 47-4041.00 [Hazardous Materials Removal Workers](#)
- Related Occupations:**
 - 47-2121.00 [Glaziers](#) *InDemand*
 - 47-5012.00 [Rotary Drill Operators, Oil and Gas](#)
 - 47-5042.00 [Mine Cutting and Channeling Machine Operators](#)
 - 49-9043.00 [Maintenance Workers, Machinery](#)
 - 53-3032.00 [Truck Drivers, Heavy and Tractor-Trailer](#) *InDemand* ✓
- Tasks:**
 - Apply chemical compounds to lead-based paint, allow compounds to dry, then scrape the hazardous material into containers for removal and/or storage.
 - Clean contaminated equipment or areas for re-use, using detergents and solvents, sandblasters, filter pumps, and steam cleaners.
 - Construct scaffolding or build containment areas prior to beginning abatement or decontamination work.
 - Drive trucks or other heavy equipment to convey contaminated waste to designated sea or ground locations.
 - Follow prescribed safety procedures, and comply with federal laws regulating waste disposal methods.
- Detailed Work Activities:**
 - adhere to safety procedures
 - clean equipment or machinery
 - drive automobile, van, or light truck
 - ensure prescribed safe radiation levels are maintained
 - follow safe waste disposal procedures
- Military Crosswalk Titles:**

Hazardous Material/Hazardous Waste (HM/HW) Staff Noncommissioned Officer/Noncommissioned Officer (Marine Corps - Enlisted)	Hazardous Material/Hazardous Waste Staff Non-Commissioned Officer/Non-Comm Officer (Marine Corps - Enlisted)
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- Apprenticeship Crosswalk Titles:** No information available.
- DOT Crosswalk Titles:**

Irradiated-Fuel Handler	Waste-Disposal Attendant
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One section of the O*NET report called “work styles” identifies key soft skills needed by workers in each occupation. For example, the top four soft skills needed by hazardous materials removal workers are dependability, cooperation, attention to detail and self-control.

Importance	Work Style
88	Dependability — Job requires being reliable, responsible, and dependable, and fulfilling obligations.
82	Cooperation — Job requires being pleasant with others on the job and displaying a good-natured, cooperative attitude.
81	Attention to Detail — Job requires being careful about detail and thorough in completing work tasks.
81	Self Control — Job requires maintaining composure, keeping emotions in check, controlling anger, and avoiding aggressive behavior, even in very difficult situations.

The task lists, work activities, and work styles from the O*NET job detail reports can also be used to identify competencies acquired by workers employed in public service/transitional jobs.

A second valuable resource is the [Edition of the Occupational Outlook Handbook](#), prepared by the Department of Labor and posted online at www.bls.gov/oco. This handbook provides job descriptions, educational and training qualifications for the work, typical wage rates, advancement opportunities, and the national job outlook of demand. See Appendix B for an example of the occupational outlook report for hazardous materials removal workers.

The screenshot shows the Bureau of Labor Statistics website interface. At the top, there is a navigation bar with links for Home, Subject Areas, Databases & Tables, Publications, and Economic Releases. Below this is a dropdown menu for selecting an occupation, currently set to 'OOH'. The main heading is 'Occupational Outlook Handbook, 2010-11 Edition' with a font size and print option. The specific page is for 'Hazardous Materials Removal Workers'. On the left, there is a sidebar with a table of contents including sections like Overview of the 2008-18 Projections, Management, Professional, Service, Sales, Administrative, Farming, Construction, Installation, Production, Transportation, Armed Forces, and Special Features. The main content area includes a list of links for 'Nature of the Work', 'Training, Other Qualifications, and Advancement', 'Employment', 'Job Outlook', 'Projections', 'Earnings', 'Wages', 'Related Occupations', and 'Sources of Additional Information'. Below this is a 'Significant Points' section with three bullet points: 'Formal education beyond high school is not required, but government standards require specific types of on-the-job training.', 'Good job opportunities are expected, mainly due to the need to replace workers who leave the occupation.', and 'Working conditions can be hazardous.' At the bottom, there is a 'SEARCH OOH' field and a 'RELATED LINKS' section for 'Nature of the Work'.

Transferable Workplace Skills




A useful checklist of skills valued in the workplace was developed by the Secretary’s Commission on Achieving Necessary Skills and summarized in its report on [Learning a Living: A Blueprint for High Performance, A SCANS Report for America 2000](http://wdr.doleta.gov/SCANS/lal/lal.pdf) at wdr.doleta.gov/SCANS/lal/lal.pdf. See Appendix C for a copy of the SCANS skills that can be used by workers and students to identify workplace skills that they have acquired through employment, community, church and school activities.

<p>SCANS: INTERPERSONAL SKILLS</p> <p>WORK ON A TEAM</p> <ul style="list-style-type: none"> ▪ work cooperatively with others. ▪ contribute to group efforts with ideas, suggestions, and effort. <p>TEACH OTHERS</p> <ul style="list-style-type: none"> ▪ help others learn needed knowledge and skills. <p>SERVE CLIENTS/CUSTOMERS</p> <ul style="list-style-type: none"> ▪ work with customers to satisfy their needs. ▪ communicate with customers to understand their expectations. <p>EXERCISE LEADERSHIP</p> <ul style="list-style-type: none"> ▪ communicate your thoughts, feelings and ideas to justify your position. ▪ persuade and convince others. ▪ responsibly challenge existing procedures or policies. <p>NEGOTIATE TO ARRIVE AT A DECISION</p> <ul style="list-style-type: none"> ▪ work toward agreements involving exchange of resources. ▪ resolve divergent interests. <p>WORK WITH CULTURAL DIVERSITY</p> <ul style="list-style-type: none"> ▪ work well with people from a variety of ethnic, social or educational backgrounds. 	<p>SCANS: ALLOCATING RESOURCES</p> <p>ALLOCATE TIME</p> <ul style="list-style-type: none"> ▪ rank work activities in order of importance. ▪ allocate time for activities. ▪ prepare a schedule of work activities. ▪ follow a work schedule. <p>ALLOCATE MONEY</p> <ul style="list-style-type: none"> ▪ handle money responsibly. ▪ prepare a budget with costs and revenues. ▪ keep good financial records. <p>ALLOCATE MATERIAL AND FACILITIES</p> <ul style="list-style-type: none"> ▪ acquire, store, and distribute materials, supplies and parts. ▪ allocate and use space efficiently. <p>ALLOCATE HUMAN RESOURCES</p> <ul style="list-style-type: none"> ▪ assess the knowledge and skills of your co-workers. ▪ divide up work responsibilities based on people's abilities. ▪ provide feedback to others about their work.
<p>SCANS: TECHNOLOGICAL SKILLS</p> <p>SELECT TECHNOLOGY</p> <ul style="list-style-type: none"> ▪ judge which sets of procedures, tools or machines, including computers and their programs, will produce the desired results. <p>APPLY TECHNOLOGY TO TASK</p> <ul style="list-style-type: none"> ▪ understand the overall intent and proper procedures for setting up and operating machines, including computers + their programming systems. <p>MAINTAIN AND TROUBLESHOOT TECHNOLOGY</p> <ul style="list-style-type: none"> ▪ prevent problems in machines, computers and other technologies. ▪ identify problems in machines, computers and other technologies. ▪ solve problems in machines, computers and other technologies. 	<p>SCANS: INFORMATION SKILLS</p> <p>ACQUIRE AND EVALUATE INFORMATION</p> <ul style="list-style-type: none"> ▪ identify a need for data. ▪ obtain the data from existing sources or create them. ▪ evaluate the relevance and accuracy of data. <p>ORGANIZE AND MAINTAIN INFORMATION</p> <ul style="list-style-type: none"> ▪ organize written or computerized records. ▪ process information. ▪ maintain written or computerized records and other forms of information in a systematic fashion. <p>INTERPRET AND COMMUNICATE INFORMATION</p> <ul style="list-style-type: none"> ▪ select and analyze information. ▪ communicate information to others using oral, written, graphic, pictorial, or multimedia methods. <p>USE COMPUTERS TO PROCESS INFORMATION</p> <ul style="list-style-type: none"> ▪ use computers to acquire and organize information ▪ use computers to analyze and communicate information.

Future Job Demand: National and State Estimates

Projected employment for each job title is posted in the O*NET reports and Occupational Outlook Handbook documents described above. Both reports also identify related occupations (civilian and military) and workforce projections can be located in the documents for these titles as well.

State links to CareerOneStop at CareerInfoNet.org detail projected job demand and average wages in Wisconsin for individual job titles.

State and National Wages						
		 Wage Table	 Hourly Wage Chart	 Yearly Wage Chart		
Location	Pay Period	2008				
		10%	25%	Median	75%	90%
United States	Hourly	\$11.41	\$14.09	\$17.94	\$24.09	\$30.42
	Yearly	\$23,700	\$29,300	\$37,300	\$50,100	\$63,300
Wisconsin	Hourly	\$13.35	\$15.44	\$19.45	\$24.01	\$29.63
	Yearly	\$27,800	\$32,100	\$40,500	\$49,900	\$61,600

[Occupation Wages FAQs](#)

[Median Wage by Occupation Across States](#)

[Compare Wages by Occupation and Local Area](#)

[Compare Wages by Metropolitan Areas](#)

National Data Source: [Bureau of Labor Statistics, Occupational Employment Statistics Survey](#)

State Data Source: [Wisconsin Occupational Employment Statistics](#)

State and National Trends				
United States	Employment		Percent Change	Job Openings¹
	2008	2018		
Hazardous materials removal workers	42,500	48,800	+15%	1,780
Wisconsin	Employment		Percent Change	Job Openings¹
	2006	2016		
Hazardous materials removal workers	460	480	+4%	10

¹Job Openings refers to the average annual job openings due to growth and net replacement.

Note: The data for the State Employment Trends and the National Employment Trends are not directly comparable. The projections period for state data is 2006-2016, while the projections period for national data is 2008-2018.

The Wisconsin Department of Workforce Development provides estimates of state demand by occupational area on its worknet.wisconsin.gov website, including wage data and projected job demand for occupational areas.

The screenshot shows the 'Occupation Profile in Wisconsin' for 'Construction and Extraction Occupations', specifically 'Construction Laborers'. The page features a navigation menu on the left with categories like Job Seeker, Career Exploration, and Youth. The main content area includes a 'Detailed Occupation Description' and two tables: 'Wage Information for Construction Laborers, 2008' and 'Number of Jobs for Construction Laborers, Wisconsin, 2008 - 2010'.

Wage Information for Construction Laborers, 2008:

Wage Level	Statewide Hourly	Statewide Annual
Entry	\$12.50	\$25,990
Average	\$18.98	\$39,480
Experienced	\$22.22	\$46,220

[Explore Local Information](#) [County Wage Comparison](#)

Number of Jobs for Construction Laborers, Wisconsin, 2008 - 2010:

Estimated Employment		Percent Change	Ave. # Openings per Year
2008	2010		
14260	13170	-7.64%	90

The Employment and Training Institute's annual surveys of job openings detail current job demand in the seven-county Milwaukee Region for job titles with 100 or more full-time or part-time openings, based on job vacancy data collected from nearly 4,000 area employers. (Studies are posted at www.eti.uwm.edu.)



Job Openings Drilldown

for the Milwaukee Area Workforce Investment Board, Inc.

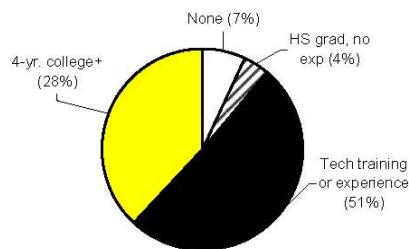
MAY 2009 JOB GAP (job seekers to full-time openings)

9 inner city zip codes	25 to 1
Milwaukee County	13 to 1
WOW counties	12 to 1
SE counties	19 to 1

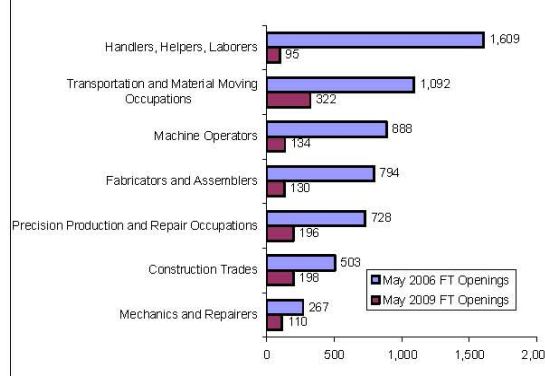
Survey of Job Openings in the 7 Counties of Southeastern Wisconsin: Week of May 25, 2009

The Employment and Training Institute collected data on job openings from 3,867 employers, using mail surveys, hundreds of follow-up phone interviews, and web listings. Results were weighted by industry and size to estimate full-time and part-time openings in the region. The survey was funded by the Regional Workforce Alliance with a Department of Labor Employment and Training WIRED grant.

Requirements for Full-Time Job Openings



Lower Demand for Blue Collar Workers



The map at left shows full-time openings by zip code.

Of the 7,520 estimated full-time openings, 3,818 (51%) were at job sites in Milwaukee County, 2,187 (29%) in Waukesha, Ozaukee and Washington counties, 1,387 (18%) in Kenosha, Racine and Walworth counties, and 128 at variable jobsites.

The full study is posted at www.eti.uwm.edu.

Prepared by the Employment & Training Institute, University of Wisconsin-Milwaukee and the Milwaukee Area Workforce Investment Board

Milwaukee Drill photo courtesy of Milwaukee Electric Tool Corporation

100+ FULL-TIME JOB OPENINGS BY EDUCATION AND TRAINING REQUIREMENTS: 7-County Region, May 2009

Entry-Level

140	Motor transportation, equip. operators + driver-sales
114	Assemblers
108	Janitors and cleaners

Tech Training and Experience

350	Registered nurses (non-BSN)
253	Nursing aides, orderlies, attendants
251	Sales workers (vehicles, home furnish., other comm.)
240	Computer operators, analysts, programmers
210	Supervisors, food preparation and service
204	Food deli and counter work
185	Hairdressers and cosmetologists
181	Health technologists and technicians
158	Truck drivers
134	Receptionists and general office clerks
133	Billing, bookkeeping, accounting, auditing clerks
121	Technicians, non-health
120	Securities and financial services sales
104	Supervisors and proprietors, salaried sales

4 Year College Degree or More

393	Elementary and secondary school teachers
240*	Computer operators, analysts, programmers
195*	Financial managers and management analysts
183	Engineers (electrical, industrial, other)
181*	Accountants and auditors
162*	Management related occupations, n.e.c.
136	Postsecondary instructors and faculty
133*	Marketing, advertising, and PR specialists
119*	Social workers
108*	Sales reps (manufacturing and wholesale)
100	Registered nurses (BSNs)

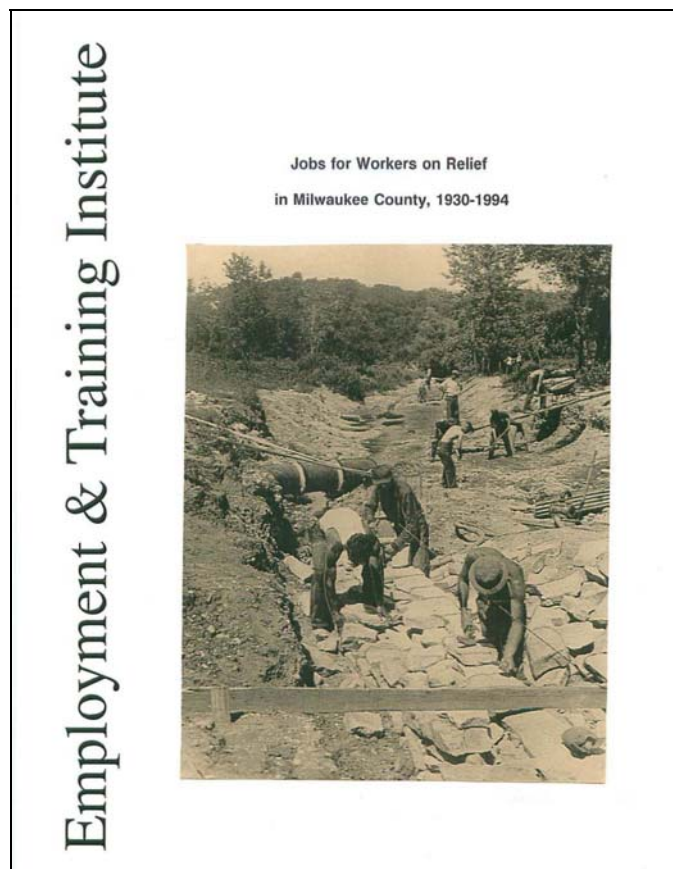
*A majority of these positions also required a specified number of years of professional experience in the field

In May 2009, 1 out of every 4 full-time job openings was in a health-related field (either directly providing health care or working for a health-care provider), and 1 out of every 3 part-time job openings was in a health-related field. 29% of the health-related openings required a 4-year college degree or more, another 60% required technical training or experience, 10% required high school graduation, and only 1% had no education or experience requirements.

III. Creating Quality Jobs: Milwaukee County's Community Service History

A 108 page report by the Employment and Training Institute describes the history of **Jobs for Workers on Relief in Milwaukee County: 1930-1994** and is available online at www.eti.uwm.edu/reprints/WPAHist.pdf. The following represent a few of the lasting contributions of relief workers to the community:

- WPA (Works Progress Administration) workers built one of the finest park systems in the nation, with construction of parkways, lagoons, swimming pools, park buildings, bathhouses, roads, walkways, pavilions, and recreation centers.
- Young men in the Civilian Conservation Corps straightened out S-curves and removed ice jams in the Milwaukee River to reduce flooding of homes on Milwaukee's northside.
- Mothers on relief made educational toys, dolls, quilts, rugs and curtains for children in the county orphanage, hospital, local schools, and day care nurseries.
- Women helped inoculate hundreds of school children.
- WPA and Resettlement Administration workers built a town – Greendale.



APPENDICES

Appendix A: O*NET Detailed Report Sample for Hazardous Materials Removal Workers

Appendix B: DOL Occupational Outlook Handbook Job Description Sample for Hazardous Materials Removal Workers

Appendix C: SCANS Job Skills Inventory Form



Updated 2008



Details Report for: 47-4041.00 - Hazardous Materials Removal Workers

Identify, remove, pack, transport, or dispose of hazardous materials, including asbestos, lead-based paint, waste oil, fuel, transmission fluid, radioactive materials, contaminated soil, etc. Specialized training and certification in hazardous materials handling or a confined entry permit are generally required. May operate earth-moving equipment or trucks.

Sample of reported job titles: Asbestos Abatement Worker, Decontamination / Decommissioning Operator (D & D Operator), Radiological Control and Safety Technician, Waste Handling Technician, Field Technician, Hazmat Technician (Hazardous Materials Technician), Sampler, Site Worker, Nuclear Waste Handler

View report:

Summary



Details

Custom

[Tasks](#) | [Tools & Technology](#) | [Knowledge](#) | [Skills](#) | [Abilities](#) | [Work Activities](#) | [Work Context](#) | [Job Zone](#) | [Interests](#) | [Work Styles](#) | [Work Values](#) | [Related Occupations](#) | [Education](#) | [Wages & Employment](#) | [Additional Information](#)

Tasks [Save Table \(XLS/CSV\)](#)

Importance	Category	Task
91	Core	Follow prescribed safety procedures, and comply with federal laws regulating waste disposal methods.
82	Core	Record numbers of containers stored at disposal sites, and specify amounts and types of equipment and waste disposed.
82	Core	Drive trucks or other heavy equipment to convey contaminated waste to designated sea or ground locations.
76	Core	Operate machines and equipment to remove, package, store, or transport loads of waste materials.
71	Core	Load and unload materials into containers and onto trucks, using hoists or forklifts.
69	Core	Clean contaminated equipment or areas for re-use, using detergents and solvents, sandblasters, filter pumps, and steam cleaners.
66	Core	Construct scaffolding or build containment areas prior to

			beginning abatement or decontamination work.
87		Supplemental	Remove asbestos and/or lead from surfaces, using hand and power tools such as scrapers, vacuums, and high-pressure sprayers.
79		Supplemental	Unload baskets of irradiated elements onto packaging machines that automatically insert fuel elements into canisters and secure lids.
79		Supplemental	Apply chemical compounds to lead-based paint, allow compounds to dry, then scrape the hazardous material into containers for removal and/or storage.
78		Supplemental	Identify asbestos, lead, or other hazardous materials that need to be removed, using monitoring devices.
72		Supplemental	Package, store, and move irradiated fuel elements in the underwater storage basin of a nuclear reactor plant, using machines and equipment.
71		Supplemental	Organize and track the locations of hazardous items in landfills.
67		Supplemental	Operate cranes to move and load baskets, casks, and canisters.
60		Supplemental	Manipulate handgrips of mechanical arms to place irradiated fuel elements into baskets.
57		Supplemental	Mix and pour concrete into forms to encase waste material for disposal.
	No data available	Supplemental	Pull tram cars along underwater tracks, and position cars to receive irradiated fuel elements; then pull loaded cars to mechanisms that automatically unload elements onto underwater tables.

[back to top](#)

Tools & Technology [Save Table \(XLS/CSV\)](#)

Tools used in this occupation:

Air samplers or collectors — Aerosol meters; Air monitoring equipment; Air sampling devices; Personal air monitors

Decontamination shower — Decontamination trailers; Decontamination units

Dredgers — Dredges; Robotic crawler dredges

Gas detector tubes — Colorimetric detector tubes/badges

Hand sprayers — Chemical solution sprayers; High-pressure water sprayers

Hazardous material protective apparel — Chemical protective clothing; Level B encapsulated suits; Liquid splash protective clothing; Vapor protective garments ([see all 7 examples](#))

Multi gas monitors — Color changing gas detection devices; Electrochemical gas monitors; Total vapor survey instruments

pH meters — pH indicators

Pick or place robots — Mechanical arms; Remote control track robots

Pneumatic sanding machines — Pneumatic scabbling tools; Sandblasters; Slurry blast equipment; Steel shot recyclable blasting equipment ([see all 5 examples](#))

Protective gloves — Chemical protective gloves; Safety gloves

Radiation detectors — Beta radiation meters; Gamma radiation meters; Radiation survey meters; Thermoluminescent dosimeters ([see all 6 examples](#))

Reagent kits for use with air samplers — Chemical agent detectors; Portable chemical agent detection devices

Respirators — Negative pressure respirators

Water samplers — Groundwater sampling equipment; Water sampling kits; Water sampling pumps

Technology used in this occupation:

Data base user interface and query software — Database software; Operation respond emergency information system OREISTM software

Internet browser software

Presentation software


Spreadsheet software

Word processing software

[See all 95 T2 categories](#)

[back to top](#)

Knowledge [Save Table \(XLS/CSV\)](#)

Importance	Knowledge
75 	Chemistry — Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.

- 65  **Mechanical** — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- 64  **Education and Training** — Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.
- 58  **English Language** — Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
- 58  **Public Safety and Security** — Knowledge of relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.
- 55  **Transportation** — Knowledge of principles and methods for moving people or goods by air, rail, sea, or road, including the relative costs and benefits.
- 47  **Physics** — Knowledge and prediction of physical principles, laws, their interrelationships, and applications to understanding fluid, material, and atmospheric dynamics, and mechanical, electrical, atomic and sub- atomic structures and processes.
- 46  **Administration and Management** — Knowledge of business and management principles involved in strategic planning, resource allocation, human resources modeling, leadership technique, production methods, and coordination of people and resources.
- 44  **Personnel and Human Resources** — Knowledge of principles and procedures for personnel recruitment, selection, training, compensation and benefits, labor relations and negotiation, and personnel information systems.
- 43  **Building and Construction** — Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures such as highways and roads.
- 41  **Mathematics** — Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
- 41  **Production and Processing** — Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.
- 37  **Computers and Electronics** — Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.
- 35  **Engineering and Technology** — Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
- 33  **Clerical** — Knowledge of administrative and clerical procedures and systems such as word processing, managing files and records,




stenography and transcription, designing forms, and other office procedures and terminology.

- 31  **Customer and Personal Service** — Knowledge of principles and processes for providing customer and personal services. This includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.
- 30  **Design** — Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.
- 25  **Medicine and Dentistry** — Knowledge of the information and techniques needed to diagnose and treat human injuries, diseases, and deformities. This includes symptoms, treatment alternatives, drug properties and interactions, and preventive health-care measures.
- 23  **Law and Government** — Knowledge of laws, legal codes, court procedures, precedents, government regulations, executive orders, agency rules, and the democratic political process.
- 16  **Sales and Marketing** — Knowledge of principles and methods for showing, promoting, and selling products or services. This includes marketing strategy and tactics, product demonstration, sales techniques, and sales control systems.
- 14  **Psychology** — Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.
- 13  **Economics and Accounting** — Knowledge of economic and accounting principles and practices, the financial markets, banking and the analysis and reporting of financial data.
- 13  **Telecommunications** — Knowledge of transmission, broadcasting, switching, control, and operation of telecommunications systems.
- 12  **Therapy and Counseling** — Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.
- 11  **Communications and Media** — Knowledge of media production, communication, and dissemination techniques and methods. This includes alternative ways to inform and entertain via written, oral, and visual media.
- 11  **Foreign Language** — Knowledge of the structure and content of a foreign (non-English) language including the meaning and spelling of words, rules of composition and grammar, and pronunciation.
- 5  **Geography** — Knowledge of principles and methods for describing the features of land, sea, and air masses, including their physical characteristics, locations, interrelationships, and distribution of plant, animal, and human life.

- 2  **Biology** — Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.
- 2  **Philosophy and Theology** — Knowledge of different philosophical systems and religions. This includes their basic principles, values, ethics, ways of thinking, customs, practices, and their impact on human culture.
- 2  **Sociology and Anthropology** — Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures and their history and origins.
- 1  **Fine Arts** — Knowledge of the theory and techniques required to compose, produce, and perform works of music, dance, visual arts, drama, and sculpture.
- 1  **History and Archeology** — Knowledge of historical events and their causes, indicators, and effects on civilizations and cultures.
- 0  **Food Production** — Knowledge of techniques and equipment for planting, growing, and harvesting food products (both plant and animal) for consumption, including storage/handling techniques.








[back to top](#)

Skills [Save Table \(XLS/CSV\)](#)

Importance	Skill
70 	Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.
66 	Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
64 	Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
63 	Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
63 	Equipment Selection — Determining the kind of tools and equipment needed to do a job.
62 	Operation and Control — Controlling operations of equipment or systems.
61 	Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.









- 61  **Reading Comprehension** — Understanding written sentences and paragraphs in work related documents.
- 60  **Monitoring** — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
- 57  **Instructing** — Teaching others how to do something.
- 57  **Learning Strategies** — Selecting and using training/instructional methods and procedures appropriate for the situation when learning or teaching new things.
- 57  **Speaking** — Talking to others to convey information effectively.
- 56  **Judgment and Decision Making** — Considering the relative costs and benefits of potential actions to choose the most appropriate one.
- 56  **Troubleshooting** — Determining causes of operating errors and deciding what to do about it.
- 54  **Repairing** — Repairing machines or systems using the needed tools.
- 54  **Time Management** — Managing one's own time and the time of others.
- 53  **Mathematics** — Using mathematics to solve problems.
- 53  **Systems Analysis** — Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
- 52  **Quality Control Analysis** — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
- 52  **Service Orientation** — Actively looking for ways to help people.
- 49  **Systems Evaluation** — Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
- 47  **Writing** — Communicating effectively in writing as appropriate for the needs of the audience.
- 46  **Complex Problem Solving** — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
- 45  **Science** — Using scientific rules and methods to solve problems.
- 44  **Coordination** — Adjusting actions in relation to others' actions.
- 39  **Technology Design** — Generating or adapting equipment and technology to serve user needs.
- 37  **Installation** — Installing equipment, machines, wiring, or programs to meet specifications.
- 37  **Operations Analysis** — Analyzing needs and product requirements

to create a design.

- 37  **Persuasion** — Persuading others to change their minds or behavior.
- 34  **Negotiation** — Bringing others together and trying to reconcile differences.
- 33  **Management of Material Resources** — Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
- 29  **Social Perceptiveness** — Being aware of others' reactions and understanding why they react as they do.
- 26  **Management of Personnel Resources** — Motivating, developing, and directing people as they work, identifying the best people for the job.
- 9  **Programming** — Writing computer programs for various purposes.
- 7  **Management of Financial Resources** — Determining how money will be spent to get the work done, and accounting for these expenditures.

[back to top](#)













Abilities [Save Table \(XLS/CSV\)](#)

Importance	Ability
78 	Problem Sensitivity — The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.
72 	Control Precision — The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
72 	Deductive Reasoning — The ability to apply general rules to specific problems to produce answers that make sense.
69 	Multilimb Coordination — The ability to coordinate two or more limbs (for example, two arms, two legs, or one leg and one arm) while sitting, standing, or lying down. It does not involve performing the activities while the whole body is in motion.
69 	Oral Comprehension — The ability to listen to and understand information and ideas presented through spoken words and sentences.
69 	Oral Expression — The ability to communicate information and ideas in speaking so others will understand.
69 	Speech Recognition — The ability to identify and understand the speech of another person.
63 	Arm-Hand Steadiness — The ability to keep your hand and arm

steady while moving your arm or while holding your arm and hand in one position.





- 63  **Inductive Reasoning** — The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
- 63  **Near Vision** — The ability to see details at close range (within a few feet of the observer).
- 63  **Written Expression** — The ability to communicate information and ideas in writing so others will understand.
- 60  **Category Flexibility** — The ability to generate or use different sets of rules for combining or grouping things in different ways.
- 60  **Information Ordering** — The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).
- 60  **Selective Attention** — The ability to concentrate on a task over a period of time without being distracted.
- 60  **Speech Clarity** — The ability to speak clearly so others can understand you.
- 60  **Written Comprehension** — The ability to read and understand information and ideas presented in writing.
- 56  **Depth Perception** — The ability to judge which of several objects is closer or farther away from you, or to judge the distance between you and an object.
- 56  **Far Vision** — The ability to see details at a distance.
- 56  **Manual Dexterity** — The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.
- 56  **Response Orientation** — The ability to choose quickly between two or more movements in response to two or more different signals (lights, sounds, pictures). It includes the speed with which the correct response is started with the hand, foot, or other body part.
- 56  **Visualization** — The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.
- 53  **Finger Dexterity** — The ability to make precisely coordinated movements of the fingers of one or both hands to grasp, manipulate, or assemble very small objects.
- 50  **Perceptual Speed** — The ability to quickly and accurately compare similarities and differences among sets of letters, numbers, objects, pictures, or patterns. The things to be compared may be presented at the same time or one after the other. This ability also includes comparing a presented object with a remembered object.

- 50  **Rate Control** — The ability to time your movements or the movement of a piece of equipment in anticipation of changes in the speed and/or direction of a moving object or scene.
- 50  **Time Sharing** — The ability to shift back and forth between two or more activities or sources of information (such as speech, sounds, touch, or other sources).
- 50  **Visual Color Discrimination** — The ability to match or detect differences between colors, including shades of color and brightness.
- 47  **Flexibility of Closure** — The ability to identify or detect a known pattern (a figure, object, word, or sound) that is hidden in other distracting material.
- 47  **Fluency of Ideas** — The ability to come up with a number of ideas about a topic (the number of ideas is important, not their quality, correctness, or creativity).
- 47  **Number Facility** — The ability to add, subtract, multiply, or divide quickly and correctly.
- 47  **Reaction Time** — The ability to quickly respond (with the hand, finger, or foot) to a signal (sound, light, picture) when it appears.
- 47  **Speed of Closure** — The ability to quickly make sense of, combine, and organize information into meaningful patterns.
- 44  **Auditory Attention** — The ability to focus on a single source of sound in the presence of other distracting sounds.
- 44  **Hearing Sensitivity** — The ability to detect or tell the differences between sounds that vary in pitch and loudness.
- 44  **Static Strength** — The ability to exert maximum muscle force to lift, push, pull, or carry objects.
- 41  **Extent Flexibility** — The ability to bend, stretch, twist, or reach with your body, arms, and/or legs.
- 41  **Originality** — The ability to come up with unusual or clever ideas about a given topic or situation, or to develop creative ways to solve a problem.
- 41  **Trunk Strength** — The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.
- 38  **Mathematical Reasoning** — The ability to choose the right mathematical methods or formulas to solve a problem.
- 38  **Memorization** — The ability to remember information such as words, numbers, pictures, and procedures.
- 35  **Dynamic Strength** — The ability to exert muscle force repeatedly or continuously over time. This involves muscular endurance and resistance to muscle fatigue.

- 35  **Gross Body Coordination** — The ability to coordinate the movement of your arms, legs, and torso together when the whole body is in motion.
- 35  **Night Vision** — The ability to see under low light conditions.
- 35  **Spatial Orientation** — The ability to know your location in relation to the environment or to know where other objects are in relation to you.
- 31  **Glare Sensitivity** — The ability to see objects in the presence of glare or bright lighting.
- 31  **Gross Body Equilibrium** — The ability to keep or regain your body balance or stay upright when in an unstable position.
- 31  **Speed of Limb Movement** — The ability to quickly move the arms and legs.
- 31  **Stamina** — The ability to exert yourself physically over long periods of time without getting winded or out of breath.
- 25  **Peripheral Vision** — The ability to see objects or movement of objects to one's side when the eyes are looking ahead.
- 25  **Sound Localization** — The ability to tell the direction from which a sound originated.
- 25  **Wrist-Finger Speed** — The ability to make fast, simple, repeated movements of the fingers, hands, and wrists.
- 6  **Dynamic Flexibility** — The ability to quickly and repeatedly bend, stretch, twist, or reach out with your body, arms, and/or legs.
- 3  **Explosive Strength** — The ability to use short bursts of muscle force to propel oneself (as in jumping or sprinting), or to throw an object.

[back to top](#)

Work Activities [Save Table \(XLS/CSV\)](#)

Importance	Work Activity
83 	Communicating with Supervisors, Peers, or Subordinates — Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
83 	Getting Information — Observing, receiving, and otherwise obtaining information from all relevant sources.
81 	Identifying Objects, Actions, and Events — Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.
81 	Inspecting Equipment, Structures, or Material — Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.

- 79  **Monitor Processes, Materials, or Surroundings** — Monitoring and reviewing information from materials, events, or the environment, to detect or assess problems.
- 79  **Operating Vehicles, Mechanized Devices, or Equipment** — Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft.
- drive automobile, van, or light truck
 - operate crane in construction, manufacturing or repair setting
 - operate forklift
- 75  **Controlling Machines and Processes** — Using either control mechanisms or direct physical activity to operate machines or processes (not including computers or vehicles).
- operate cleaning equipment
 - operate hoist, winch, or hydraulic boom
 - operate material moving, loading, or unloading equipment
 - operate sandblasting equipment
- 75  **Estimating the Quantifiable Characteristics of Products, Events, or Information** — Estimating sizes, distances, and quantities; or determining time, costs, resources, or materials needed to perform a work activity.
- 73  **Developing Objectives and Strategies** — Establishing long-range objectives and specifying the strategies and actions to achieve them.
- 73  **Making Decisions and Solving Problems** — Analyzing information and evaluating results to choose the best solution and solve problems.
- 73  **Updating and Using Relevant Knowledge** — Keeping up-to-date technically and applying new knowledge to your job.
- follow safe waste disposal procedures
 - use government regulations
- 72  **Analyzing Data or Information** — Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
- 72  **Evaluating Information to Determine Compliance with Standards** — Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.
- adhere to safety procedures
 - ensure prescribed safe radiation levels are maintained
 - perform safety inspections in transportation setting
- 72  **Organizing, Planning, and Prioritizing Work** — Developing specific goals and plans to prioritize, organize, and accomplish your work.
- 72  **Training and Teaching Others** — Identifying the educational needs of others, developing formal educational or training programs or

classes, and teaching or instructing others.

- 71  **Handling and Moving Objects** — Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
- mix paint, ingredients, or chemicals, according to specifications
 - package goods for shipment or storage
 - place radioactive waste in disposal containers
- 69  **Monitoring and Controlling Resources** — Monitoring and controlling resources and overseeing the spending of money.
- 69  **Thinking Creatively** — Developing, designing, or creating new applications, ideas, relationships, systems, or products, including artistic contributions.
- 68  **Processing Information** — Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.
- 67  **Coordinating the Work and Activities of Others** — Getting members of a group to work together to accomplish tasks.
- 67  **Guiding, Directing, and Motivating Subordinates** — Providing guidance and direction to subordinates, including setting performance standards and monitoring performance.
- 67  **Performing General Physical Activities** — Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials.
- load, unload, or stack containers, materials, or products
- 66  **Documenting/Recording Information** — Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.
- maintain production or work records
- 66  **Establishing and Maintaining Interpersonal Relationships** — Developing constructive and cooperative working relationships with others, and maintaining them over time.
- 64  **Assisting and Caring for Others** — Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers, customers, or patients.
- 64  **Interpreting the Meaning of Information for Others** — Translating or explaining what information means and how it can be used.
- 64  **Judging the Qualities of Things, Services, or People** — Assessing the value, importance, or quality of things or people.
- 63  **Coaching and Developing Others** — Identifying the developmental needs of others and coaching, mentoring, or otherwise helping others to improve their knowledge or skills.
- 63  **Developing and Building Teams** — Encouraging and building mutual trust, respect, and cooperation among team members.

- 63  **Repairing and Maintaining Mechanical Equipment** — Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.
- clean equipment or machinery
- 62  **Scheduling Work and Activities** — Scheduling events, programs, and activities, as well as the work of others.
- 58  **Drafting, Laying Out, and Specifying Technical Devices, Parts, and Equipment** — Providing documentation, detailed instructions, drawings, or specifications to tell others about how devices, parts, equipment, or structures are to be fabricated, constructed, assembled, modified, maintained, or used.
- 58  **Staffing Organizational Units** — Recruiting, interviewing, selecting, hiring, and promoting employees in an organization.
- 57  **Communicating with Persons Outside Organization** — Communicating with people outside the organization, representing the organization to customers, the public, government, and other external sources. This information can be exchanged in person, in writing, or by telephone or e-mail.
- 57  **Provide Consultation and Advice to Others** — Providing guidance and expert advice to management or other groups on technical, systems-, or process-related topics.
- 56  **Performing Administrative Activities** — Performing day-to-day administrative tasks such as maintaining information files and processing paperwork.
- maintain records, reports, or files
 - prepare reports
- 54  **Resolving Conflicts and Negotiating with Others** — Handling complaints, settling disputes, and resolving grievances and conflicts, or otherwise negotiating with others.
- 54  **Selling or Influencing Others** — Convincing others to buy merchandise/goods or to otherwise change their minds or actions.
- 51  **Performing for or Working Directly with the Public** — Performing for people or dealing directly with the public. This includes serving customers in restaurants and stores, and receiving clients or guests.
- 50  **Repairing and Maintaining Electronic Equipment** — Servicing, repairing, calibrating, regulating, fine-tuning, or testing machines, devices, and equipment that operate primarily on the basis of electrical or electronic (not mechanical) principles.
- 48  **Interacting With Computers** — Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.

[back to top](#)

Work Context [Save Table \(XLS/CSV\)](#)

Context	Work Context
92	Wear Common Protective or Safety Equipment such as Safety Shoes, Glasses, Gloves, Hearing Protection, Hard Hats, or Life Jackets — How much does this job require wearing common protective or safety equipment such as safety shoes, glasses, gloves, hard hats or life jackets?
91	Responsible for Others' Health and Safety — How much responsibility is there for the health and safety of others in this job?
89	Work With Work Group or Team — How important is it to work with others in a group or team in this job?
85	Duration of Typical Work Week — Number of hours typically worked in one week.
85	Time Pressure — How often does this job require the worker to meet strict deadlines?
84	Telephone — How often do you have telephone conversations in this job?
81	Contact With Others — How much does this job require the worker to be in contact with others (face-to-face, by telephone, or otherwise) in order to perform it?
75	Responsibility for Outcomes and Results — How responsible is the worker for work outcomes and results of other workers?
74	Exposed to Contaminants — How often does this job require working exposed to contaminants (such as pollutants, gases, dust or odors)?
72	Exposed to Hazardous Conditions — How often does this job require exposure to hazardous conditions?
71	Impact of Decisions on Co-workers or Company Results — How do the decisions an employee makes impact the results of co-workers, clients or the company?
71	Spend Time Using Your Hands to Handle, Control, or Feel Objects, Tools, or Controls — How much does this job require using your hands to handle, control, or feel objects, tools or controls?
70	Coordinate or Lead Others — How important is it to coordinate or lead others in accomplishing work activities in this job?
70	Outdoors, Exposed to Weather — How often does this job require working outdoors, exposed to all weather conditions?
70	Wear Specialized Protective or Safety Equipment such as Breathing Apparatus, Safety Harness, Full Protection Suits, or Radiation Protection — How much does this job require wearing specialized protective or safety equipment such as breathing





apparatus, safety harness, full protection suits, or radiation protection?

- 69  **Deal With External Customers** — How important is it to work with external customers or the public in this job?
- 69  **Frequency of Decision Making** — How frequently is the worker required to make decisions that affect other people, the financial resources, and/or the image and reputation of the organization?
- 67  **Face-to-Face Discussions** — How often do you have to have face-to-face discussions with individuals or teams in this job?
- 67  **Importance of Repeating Same Tasks** — How important is repeating the same physical activities (e.g., key entry) or mental activities (e.g., checking entries in a ledger) over and over, without stopping, to performing this job?
- 67  **In an Enclosed Vehicle or Equipment** — How often does this job require working in a closed vehicle or equipment (e.g., car)?
- 67  **Spend Time Making Repetitive Motions** — How much does this job require making repetitive motions?
- 67  **Very Hot or Cold Temperatures** — How often does this job require working in very hot (above 90 F degrees) or very cold (below 32 F degrees) temperatures?
- 65  **Importance of Being Exact or Accurate** — How important is being very exact or highly accurate in performing this job?
- 65  **Spend Time Standing** — How much does this job require standing?
- 63  **Freedom to Make Decisions** — How much decision making freedom, without supervision, does the job offer?
- 63  **Outdoors, Under Cover** — How often does this job require working outdoors, under cover (e.g., structure with roof but no walls)?
- 62  **Level of Competition** — To what extent does this job require the worker to compete or to be aware of competitive pressures?
- 62  **Structured versus Unstructured Work** — To what extent is this job structured for the worker, rather than allowing the worker to determine tasks, priorities, and goals?
- 60  **Electronic Mail** — How often do you use electronic mail in this job?
- 60  **Physical Proximity** — To what extent does this job require the worker to perform job tasks in close physical proximity to other people?
- 57  **Indoors, Environmentally Controlled** — How often does this job require working indoors in environmentally controlled conditions?
- 56  **Exposed to Hazardous Equipment** — How often does this job require exposure to hazardous equipment?
- 56  **Sounds, Noise Levels Are Distracting or Uncomfortable** — How

often does this job require working exposed to sounds and noise levels that are distracting or uncomfortable?

- 54  **Pace Determined by Speed of Equipment** — How important is it to this job that the pace is determined by the speed of equipment or machinery? (This does not refer to keeping busy at all times on this job.)
- 53  **Exposed to High Places** — How often does this job require exposure to high places?
- 53  **Letters and Memos** — How often does the job require written letters and memos?
- 53  **Spend Time Bending or Twisting the Body** — How much does this job require bending or twisting your body?
- 52  **Deal With Unpleasant or Angry People** — How frequently does the worker have to deal with unpleasant, angry, or discourteous individuals as part of the job requirements?
- 49  **Indoors, Not Environmentally Controlled** — How often does this job require working indoors in non-controlled environmental conditions (e.g., warehouse without heat)?
- 48  **Spend Time Sitting** — How much does this job require sitting?
- 47  **In an Open Vehicle or Equipment** — How often does this job require working in an open vehicle or equipment (e.g., tractor)?
- 47  **Spend Time Keeping or Regaining Balance** — How much does this job require keeping or regaining your balance?
- 46  **Frequency of Conflict Situations** — How often are there conflict situations the employee has to face in this job?
- 42  **Extremely Bright or Inadequate Lighting** — How often does this job require working in extremely bright or inadequate lighting conditions?
- 40  **Spend Time Walking and Running** — How much does this job require walking and running?
- 38  **Consequence of Error** — How serious would the result usually be if the worker made a mistake that was not readily correctable?
- 36  **Degree of Automation** — How automated is the job?
- 36  **Exposed to Radiation** — How often does this job require exposure to radiation?
- 34  **Cramped Work Space, Awkward Positions** — How often does this job require working in cramped work spaces that requires getting into awkward positions?
- 34  **Exposed to Disease or Infections** — How often does this job require exposure to disease/infections?
- 32  **Spend Time Climbing Ladders, Scaffolds, or Poles** — How much

does this job require climbing ladders, scaffolds, or poles?

- 30  **Spend Time Kneeling, Crouching, Stooping, or Crawling** — How much does this job require kneeling, crouching, stooping or crawling?
- 27  **Public Speaking** — How often do you have to perform public speaking in this job?
- 26  **Exposed to Whole Body Vibration** — How often does this job require exposure to whole body vibration (e.g., operate a jackhammer)?
- 26  **Work Schedules** — How regular are the work schedules for this job?
- 21  **Exposed to Minor Burns, Cuts, Bites, or Stings** — How often does this job require exposure to minor burns, cuts, bites, or stings?
- 12  **Deal With Physically Aggressive People** — How frequently does this job require the worker to deal with physical aggression of violent individuals?

[back to top](#)

Job Zone [Save Table \(XLS/CSV\)](#)

Title Job Zone Two: Some Preparation Needed

Education These occupations usually require a high school diploma.

Related Experience Some previous work-related skill, knowledge, or experience is usually needed. For example, a teller would benefit from experience working directly with the public.


Job Training Employees in these occupations need anywhere from a few months to one year of working with experienced employees. A recognized apprenticeship program may be associated with these occupations.

Job Zone Examples These occupations often involve using your knowledge and skills to help others. Examples include sheet metal workers, forest fire fighters, customer service representatives, physical therapist aides, salespersons (retail), and tellers.






SVP Range (4.0 to < 6.0)

[back to top](#)

Interests [Save Table \(XLS/CSV\)](#)

Occupational Interest	Interest
95 	Realistic — Realistic occupations frequently involve work activities that include practical, hands-on problems and solutions. They often deal with plants, animals, and real-world materials like wood, tools,

and machinery. Many of the occupations require working outside, and do not involve a lot of paperwork or working closely with others.


- 45  **Conventional** — Conventional occupations frequently involve following set procedures and routines. These occupations can include working with data and details more than with ideas. Usually there is a clear line of authority to follow.
- 33  **Investigative** — Investigative occupations frequently involve working with ideas, and require an extensive amount of thinking. These occupations can involve searching for facts and figuring out problems mentally.
- 22  **Enterprising** — Enterprising occupations frequently involve starting up and carrying out projects. These occupations can involve leading people and making many decisions. Sometimes they require risk taking and often deal with business.
- 11  **Social** — Social occupations frequently involve working with, communicating with, and teaching people. These occupations often involve helping or providing service to others.
- 0  **Artistic** — Artistic occupations frequently involve working with forms, designs and patterns. They often require self-expression and the work can be done without following a clear set of rules.

[back to top](#)

Work Styles [Save Table \(XLS/CSV\)](#)

Importance	Work Style
88 	Dependability — Job requires being reliable, responsible, and dependable, and fulfilling obligations.
82 	Cooperation — Job requires being pleasant with others on the job and displaying a good-natured, cooperative attitude.
81 	Attention to Detail — Job requires being careful about detail and thorough in completing work tasks.
81 	Self Control — Job requires maintaining composure, keeping emotions in check, controlling anger, and avoiding aggressive behavior, even in very difficult situations.
80 	Leadership — Job requires a willingness to lead, take charge, and offer opinions and direction.
75 	Initiative — Job requires a willingness to take on responsibilities and challenges.
75 	Stress Tolerance — Job requires accepting criticism and dealing calmly and effectively with high stress situations.
74 	Adaptability/Flexibility — Job requires being open to change

(positive or negative) and to considerable variety in the workplace.


- 73  **Integrity** — Job requires being honest and ethical.
- 65  **Independence** — Job requires developing one's own ways of doing things, guiding oneself with little or no supervision, and depending on oneself to get things done.
- 59  **Concern for Others** — Job requires being sensitive to others' needs and feelings and being understanding and helpful on the job.
- 59  **Persistence** — Job requires persistence in the face of obstacles.
- 58  **Analytical Thinking** — Job requires analyzing information and using logic to address work-related issues and problems.
- 58  **Innovation** — Job requires creativity and alternative thinking to develop new ideas for and answers to work-related problems.
- 57  **Social Orientation** — Job requires preferring to work with others rather than alone, and being personally connected with others on the job.
- 55  **Achievement/Effort** — Job requires establishing and maintaining personally challenging achievement goals and exerting effort toward mastering tasks.

[back to top](#)

Work Values [Save Table \(XLS/CSV\)](#)

Extent	Work Value
89 	Support — Occupations that satisfy this work value offer supportive management that stands behind employees. Corresponding needs are Company Policies, Supervision: Human Relations and Supervision: Technical.
45 	Independence — Occupations that satisfy this work value allow employees to work on their own and make decisions. Corresponding needs are Creativity, Responsibility and Autonomy.
45 	Relationships — Occupations that satisfy this work value allow employees to provide service to others and work with co-workers in a friendly non-competitive environment. Corresponding needs are Co-workers, Moral Values and Social Service.
36 	Working Conditions — Occupations that satisfy this work value offer job security and good working conditions. Corresponding needs are Activity, Compensation, Independence, Security, Variety and Working Conditions.
28 	Achievement — Occupations that satisfy this work value are results oriented and allow employees to use their strongest abilities, giving them a feeling of accomplishment. Corresponding needs are Ability

Utilization and Achievement.

22  **Recognition** — Occupations that satisfy this work value offer advancement, potential for leadership, and are often considered prestigious. Corresponding needs are Advancement, Authority, Recognition and Social Status.

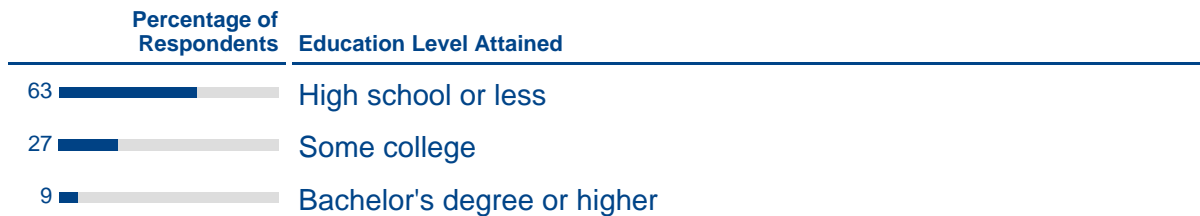
[back to top](#)

Related Occupations [Save Table \(XLS/CSV\)](#)

- 47-2121.00 [Glaziers](#)
- 47-5012.00 [Rotary Drill Operators, Oil and Gas](#)
- 47-5042.00 [Mine Cutting and Channeling Machine Operators](#)
- 49-9043.00 [Maintenance Workers, Machinery](#)
- 53-3032.00 [Truck Drivers, Heavy and](#)  
- 53-3033.00 [Truck Drivers, Light or Delivery Services](#) 
- 53-6051.08 [Freight and Cargo Inspectors](#)
- 53-7121.00 [Tank Car, Truck, and Ship Loaders](#)

[back to top](#)

Education



Source: [Bureau of Labor Statistics](#)  survey of employees aged 25-44.

[back to top](#)

Wages & Employment Trends

National

Median wages (2008) \$17.94 hourly, \$37,310 annual

Employment (2008) 42,000 employees

Projected growth (2008-  **Faster than average (14% to 19%)**

2018)

**Projected job openings
(2008-2018)** 17,800

Top industries (2008) [Administrative and Support Services](#) (82% employed in this sector)
[\(see all industries\)](#)

State & National

Select a State



Source: Bureau of Labor Statistics [2008 wage data](#) and [2008-2018 employment projections](#). "Projected growth" represents the estimated change in total employment over the projections period (2008-2018). "Projected job openings" represent openings due to growth and replacement.

[back to top](#)

Sources of Additional Information

Disclaimer: Sources are listed to provide additional information on related jobs, specialties, and/or industries. Links to non-DOL Internet sites are provided for your convenience and do not constitute an endorsement.

- [Hazardous materials removal workers](#). Bureau of Labor Statistics, U.S. Department of Labor. *Occupational Outlook Handbook, 2010-11 Edition*.

[back to top](#)

Send comments or questions to onet@ncmail.net



Occupational Outlook Handbook, 2010-11 Edition

Hazardous Materials Removal Workers

- [Nature of the Work](#)
- [Training, Other Qualifications, and Advancement](#)
- [Employment](#)
- [Job Outlook](#)
- [Projections](#)
- [Earnings](#)
- [Wages](#)
- [Related Occupations](#)
- [Sources of Additional Information](#)

Significant Points

- Formal education beyond high school is not required, but government standards require specific types of on-the-job training.
- Good job opportunities are expected, mainly due to the need to replace workers who leave the occupation.
- Working conditions can be hazardous.

Nature of the Work

Hazardous materials removal workers identify, remove, package, transport, and dispose of asbestos, radioactive and nuclear waste, arsenic, lead, and mercury—or any materials that typically possess at least one of four characteristics—ignitability, corrosivity, reactivity, or toxicity. These workers often respond to emergencies where harmful substances are present, and are sometimes called abatement, remediation, or decontamination specialists. Increased public awareness and Federal and State regulations are resulting in the removal of hazardous materials from buildings, facilities, and the environment to prevent contamination of natural resources and to promote public health and safety.

Hazardous materials removal workers use a variety of tools and equipment, depending on the work at hand. Equipment ranges from brooms to personal protective suits that completely isolate workers from the hazardous material. Because of the threat of contamination, workers often wear disposable or reusable coveralls, gloves, hardhats, shoe covers, safety glasses or goggles, chemical-resistant clothing, face shields, and devices to protect one's hearing. Most workers are also required to wear respirators while working, to protect them from airborne particles or noxious gases. The respirators range from simple versions that cover only the mouth and nose to self-contained suits with their own air supply. Recent improvements to respiratory equipment allows for greater comfort, enabling workers to wear the equipment for a longer period of time.

Asbestos and lead are two of the most common contaminants that hazardous materials removal workers encounter. Through the 1970s, asbestos was used to fireproof roofing and flooring, for heat insulation, and for a variety of other purposes. It was durable, fire retardant, corrosion resistant, and insulated well, making it ideal for such applications. Embedded in materials, asbestos is fairly harmless; airborne as a particulate,

however, can cause several deadly lung diseases, including lung cancer and asbestosis. Today, asbestos is rarely used in buildings, but there are still structures that contain this material that must be remediated. Similarly, lead was a common building element found in paint and plumbing fixtures and pipes until the late 1970s. Because lead is easily absorbed into the bloodstream, often from breathing lead dust or from eating chips of paint containing lead, it can cause serious health risks, especially in children. Due to these risks, it has become necessary to remove lead-based products from buildings and structures.

Asbestos abatement workers and *lead abatement workers* remove asbestos, lead, and other materials from buildings scheduled to be renovated or demolished. Using a variety of hand and power tools, such as vacuums and scrapers, these workers remove the asbestos and lead from surfaces. A typical residential lead abatement project involves the use of a chemical to strip the lead-based paint from the walls of the home. Lead abatement workers apply the compound with a putty knife and allow it to dry. Then they scrape the hazardous material into an impregnable container for transport and storage. They also use sandblasters and high-pressure water sprayers to remove lead from larger structures. The vacuums utilized by asbestos abatement workers have special, highly efficient filters designed to trap the asbestos, which later is disposed of or stored. During the abatement, special monitors measure the amount of asbestos and lead in the air, to protect the workers; in addition, lead abatement workers wear a personal air monitor that indicates the amount of lead to which a worker has been exposed. Workers also use monitoring devices to identify the asbestos, lead, and other materials that need to be removed from the surfaces of walls and structures.

Transportation of hazardous materials is safer today than it was in the past, but accidents still occur. *Emergency and disaster response workers* clean up hazardous materials after train derailments and trucking accidents. These workers also are needed when an immediate cleanup is required, as would be the case after an attack by biological or chemical weapons.

Some hazardous materials removal workers specialize in radioactive substances. These substances range from low-level-contaminated protective clothing, tools, filters, and medical equipment, to highly radioactive nuclear reactor fuels. *Decontamination technicians* perform duties similar to those of janitors and cleaners, but the items and areas they clean are radioactive. They use brooms, mops, and other tools to clean exposed areas and remove exposed items for decontamination or disposal. Some of these jobs are now being done by robots controlled by people away from the contamination site. Increasingly, many of these remote devices are being used to automatically monitor and survey surfaces, such as floors and walls, for contamination.

With experience, decontamination technicians can advance to *radiation-protection technician* jobs and use radiation survey meters and other remote devices to locate and assess radiated materials, operate high-pressure cleaning equipment for decontamination, and package radioactive materials for transportation or disposal.

Decommissioning and decontamination workers remove and treat radioactive materials generated by nuclear facilities and power plants. With a variety of handtools, they break down contaminated items such as gloveboxes, which are used to process radioactive materials. At decommissioning sites, the workers clean and decontaminate the facility, as well as remove any radioactive or contaminated materials.

Treatment, storage, and disposal workers transport and prepare materials for treatment or disposal. To ensure proper treatment of materials, laws enforced by the U.S. Environmental Protection Agency (EPA) or Occupational Safety and Health Administration (OSHA) require these workers to be able to verify shipping manifests. At incinerator facilities, treatment, storage, and disposal workers transport materials from the customer or service center to the incinerator. At landfills, they follow a strict procedure for the processing and storage of hazardous materials. They organize and track the location of items in the landfill and may help change the state of a material from liquid to solid in preparation for its storage. These workers typically operate heavy machinery, such as forklifts, earthmoving machinery, and large trucks and rigs.

To help clean up the Nation's hazardous waste sites, a Federal program, called Superfund, was created in 1980. Under the Superfund program, abandoned, accidentally spilled, or illegally dumped hazardous waste that poses a current or future threat to human health or the environment is cleaned up. In doing so, the EPA along with potentially responsible parties, communities, local, State, and Federal authorities, identify hazardous waste sites, test site conditions, devise cleanup plans, and clean up the sites.

Mold remediation is a new aspect of some hazardous materials removal work. Some types of mold can cause harsh allergic reactions, especially in people who are susceptible to them. Although mold is present in almost all structures and is not usually defined as a hazardous material, some mold—especially the types that cause allergic reactions—can infest a building to such a degree that extensive efforts must be taken to remove it safely. Molds are fungi that typically grow in warm, damp conditions both indoors and outdoors year round. They can be found in heating and air-conditioning ducts, within walls, and in showers, attics, and basements. Although mold remediation is often undertaken by other construction workers, large scale mold removal is usually handled by hazardous materials removal workers, who take special precautions to protect themselves and surrounding areas from being contaminated.

Hazardous materials removal workers may also be required to construct scaffolding or erect containment areas prior to abatement or decontamination. In most cases, government regulation dictates that hazardous materials removal workers be closely supervised on the worksite. The standard usually is 1 supervisor to every 10 workers. The work is highly structured, sometimes planned years in advance, and usually team oriented. There is a great deal of cooperation among supervisors and workers. Because of the hazard presented by the materials being removed, work areas are restricted to licensed hazardous materials removal workers, thus minimizing exposure to the public.

Work environment. Hazardous materials removal workers function in a highly structured environment to minimize the danger they face. Each phase of an operation is planned in advance, and workers are trained to deal with hazardous situations. Crews and supervisors take every safety measure to ensure that the worksite is safe. Whether they work with asbestos, mold, lead abatement, or in radioactive decontamination, hazardous materials removal workers must stand, stoop, and kneel for long periods. Some must wear fully enclosed personal protective suits for several hours at a time; these suits may be hot and uncomfortable and may cause some individuals to experience claustrophobia.

Hazardous materials removal workers face different working conditions, depending on their area of expertise. Although many work a standard 40-hour week, overtime and shift work are common, especially for emergency and disaster response workers. Asbestos and lead abatement workers usually work in structures such as office buildings, schools, or historic buildings under renovation. Because they are under pressure to complete their work within certain deadlines, workers may experience fatigue. Completing projects frequently requires night and weekend work, because hazardous materials removal workers often work around the schedules of others. Treatment, storage, and disposal workers are employed primarily at facilities such as landfills, incinerators, boilers, and industrial furnaces. These facilities often are located in remote areas, due to the kinds of work being done, so workers may have to commute long distances to their jobs.

Decommissioning and decontamination workers, decontamination technicians, and radiation protection technicians work at nuclear facilities and electric power plants. Like treatment, storage, and disposal facilities, these sites are often far from urban areas. Workers who perform jobs in cramped conditions may need to use sharp tools to dismantle contaminated objects. A hazardous materials removal worker must have great self-control and a level head to cope with the daily stress associated with handling hazardous materials.

Hazardous materials removal workers may be required to travel outside their normal working areas in order to respond to emergency cleanups, which sometimes take several days or weeks to complete. During the cleanup, workers may be away from home for the entire time.



Some hazardous materials removal workers specialize in radioactive substances.

Training, Other Qualifications, and Advancement

No formal education beyond a high school diploma is required for a person to become a hazardous materials removal worker. However, Federal, State, and local government standards require specific types of on-the-job training. Regulations vary by specialty and sometimes by State or locality. Employers are responsible for employee training.

Education and training. Hazardous materials removal workers usually need at least 40 hours of formal on-the-job training. For most specialties, this training must meet specific requirements set by the Federal Government or individual States.

Licensure. Workers who treat asbestos and lead, the most common contaminants, must complete a training program through their employer that meets Occupational Safety and Health Administration (OSHA) standards. Employer-sponsored training is usually performed in-house, and the employer is responsible for covering all technical and safety subjects outlined by OSHA.

To become an emergency and disaster response worker and treatment, storage, and disposal worker, candidates must obtain a Federal license as mandated by OSHA. Employers are responsible for ensuring that employees complete a formal 40-hour training program, given either in house or in OSHA-approved training centers. The program covers health hazards, personal protective equipment and clothing, site safety, recognition and identification of hazards, and decontamination.

In some cases, workers may discover one hazardous material while abating another. If workers are not licensed to handle the newly discovered material, they cannot continue to work with it. Many experienced workers opt to take courses in additional types of hazardous material removal to avoid this situation.

Mold removal is not regulated by OSHA, but is regulated by each State. For decommissioning and decontamination workers employed at nuclear facilities, training is most extensive. In addition to obtaining licensure through the standard 40-hour training course in hazardous waste removal, workers must take courses dealing with regulations governing nuclear materials and radiation safety as mandated by the Nuclear Regulatory Commission. These courses add up to approximately 3 months of training, although most are not taken consecutively. Many agencies, organizations, and companies throughout the country provide training programs that are approved by the U.S. Environmental Protection Agency, the U.S. Department of Energy, and other regulatory bodies. To maintain their license, workers in all fields are required to take continuing education courses as a refresher, every year.

Other qualifications. Workers must be able to perform basic mathematical conversions and calculations when mixing solutions that neutralize contaminants and should have good physical strength and manual dexterity. Because of the nature of the work and the time constraints sometimes involved, employers prefer people who are dependable, prompt, and detail-oriented. Since much of the work is done in buildings, a background in construction is helpful.

Employment

Hazardous materials removal workers held about 42,500 jobs in 2008. About 79 percent were employed in waste management and remediation services. Another 5 percent were employed in construction.

Job Outlook

Employment is expected to grow [faster than average](#). [Good job opportunities](#) are expected because of the need to replace the large number of workers who leave the occupation each year.

Employment change. Employment of hazardous materials removal workers is expected to grow 15 percent between 2008 and 2018, faster than the average for all occupations. The need for decontamination technicians, radiation safety technicians, and decommissioning workers, in response to increased pressure for cleaner electric generation facilities, is expected to drive employment growth. Furthermore, renewed interest in nuclear power production could lead to the reactivation of additional facilities, resulting in the need for many new remediation workers.

Numerous Superfund projects will require cleanup of hazardous materials waste sites, also spurring demand for hazardous materials removal workers. However, employment growth will largely be determined by Federal funding.

Since the 1970s, asbestos and lead-based paints and plumbing fixtures and pipes have not been used and much of the remediation stemming from those products has taken place. With the continuing decline in the number of structures that contain asbestos and lead, demand for asbestos and lead abatement workers will be somewhat limited. Some demand, however, will result from the need to abate lead and asbestos from Federal and historic buildings.

Job prospects. In addition to job openings from employment growth, many openings are expected for

hazardous materials removal workers because of the need to replace workers who leave the occupation, leading to good opportunities. Job opportunities for radiation safety technicians and decontamination workers should be plentiful as a number of new workers will be needed to replace those who retire or leave the occupation for other reasons. Additional openings may result for remediation workers if nuclear power is more widely adopted in the next decade.

Lead and asbestos workers will have some opportunities at specialty remediation companies as restoration of Federal buildings and historic structures continues, although at a slower pace than in the past. The best employment opportunities for mold remediation workers will be in Southeast, and parts of the Northeast and Northwest, where mold tends to thrive.

Many of these workers are not greatly affected by economic fluctuations because the facilities in which they work must operate, regardless of the state of the economy.

Projections Data

Projections data from the National Employment Matrix

Occupational Title	SOC Code	Employment, 2008	Projected Employment, 2018	Change, 2008-18		Detailed Statistics	
				Number	Percent		
Hazardous materials removal workers	47-4041	42,500	48,800	6,300	15	[PDF]	[XLS]

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on [Occupational Information Included in the Handbook](#).

Earnings

Median hourly wages of hazardous materials removal workers were \$17.94 in May 2008. The middle 50 percent earned between \$14.09 and \$24.09 per hour. The lowest 10 percent earned less than \$11.41 per hour, and the highest 10 percent earned more than \$30.42 per hour. Median hourly wages in remediation and other waste management services, the largest industry employing hazardous materials removal workers, were \$18.10.

For the latest wage information:

The above wage data are from the [Occupational Employment Statistics](#) (OES) survey program, unless otherwise noted. For the latest National, State, and local earnings data, visit the following pages:

- [hazardous materials removal workers](#)

Related Occupations

Workers who perform similar tasks to those of hazardous materials removal workers include:

[Insulation workers](#)

[Painters and paperhangers](#)

[Power plant operators, distributors, and dispatchers](#)

[Sheet metal workers](#)

[Water and liquid waste treatment plant and system operators](#)

Other workers who commonly respond to emergencies involving hazardous materials include:

[Fire fighters](#)

[Police and detectives](#)

Sources of Additional Information

Disclaimer:

Links to non-BLS Internet sites are provided for your convenience and do not constitute an endorsement.

For more information on hazardous materials removal workers in the construction industry, including information on training, contact:

- Laborers-AGC Education and Training Fund, 37 Deerfield Rd., Pomfret, CT 06259.

O*NET-SOC Code Coverage

Get more information from O*NET—the Occupational Information Network:

O*NET provides comprehensive information on key characteristics of workers and occupations. For information on a specific occupation, select the appropriate link below. For more information on O*NET, visit their [homepage](#).

- [Hazardous Materials Removal Workers \(47-4041.00\)](#)

Suggested citation: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2010-11 Edition*, Hazardous Materials Removal Workers, on the Internet at <http://www.bls.gov/oco/ocos256.htm> (visited March 23, 2010).

Last Modified Date: December 17, 2009

U.S. Bureau of Labor Statistics Office of Occupational Statistics and Employment Projections
Suite 2135, 2 Massachusetts Avenue, NE Washington, DC 20212-0001

<http://www.bls.gov/oco/> | Telephone: (202) 691-5700 | Fax: (202) 691-5745 [Do you have a question](#)
about the *Occupational Outlook Handbook*?

The Department of Labor talked with hundreds of employers, workers and supervisors to identify skills people need in today's workplace. Use this checklist to record projects and activities that are helping you improve your SCANS basic work skills through school, part-time work or volunteer activities.

SCANS: INTERPERSONAL SKILLS

NAME _____

WORK ON A TEAM

- work cooperatively with others.
- contribute to group efforts with ideas, suggestions, and effort.

TEACH OTHERS

- help others learn needed knowledge and skills.

SERVE CLIENTS/CUSTOMERS

- work with customers to satisfy their needs.
- communicate with customers to understand their expectations.

EXERCISE LEADERSHIP

- communicate your thoughts, feelings and ideas to justify your position.
- persuade and convince others.
- responsibly challenge existing procedures or policies.

NEGOTIATE TO ARRIVE AT A DECISION

- work toward agreements involving exchange of resources.
- resolve divergent interests.

WORK WITH CULTURAL DIVERSITY

- work well with people from a variety of ethnic, social or educational backgrounds.

Examples of your work:

SCANS: TECHNOLOGICAL SKILLS

SELECT TECHNOLOGY

- judge which sets of procedures, tools or machines, including computers and their programs, will produce the desired results.

APPLY TECHNOLOGY TO TASK

- understand the overall intent and proper procedures for setting up and operating machines, including computers + their programming systems.

MAINTAIN AND TROUBLESHOOT TECHNOLOGY

- prevent problems in machines, computers and other technologies.
- identify problems in machines, computers and other technologies.
- solve problems in machines, computers and other technologies.

