



Chemical Technicians

... Have diverse career opportunities

Chemical technicians play a vital role in a variety of industries, working with chemists and chemical engineers to develop, test, and manufacture chemical products. Their career opportunities are diverse, depending on where they work and their education, skills, and experience. Chemical technicians operate standard laboratory equipment, set up apparatus for chemical reactions, and perform chemical tests and experiments. They also test for quality, performance, or composition of chemical compounds or materials; conduct a variety of laboratory procedures, from routine process control to complex research projects; and help devise syntheses and analytical procedures. Other technicians act as troubleshooters; manage databases; monitor pollution levels by testing water, soil, and air; work in shipping to ensure that packaging of hazardous materials complies with regulations; and work in pilot plants, assisting engineers with running experiments in a miniature version of a manufacturing process. Chemical technicians work in laboratories to ensure that processes are carried out safely, cost-effectively, and according to the highest professional standards.

... Experience career growth

Chemical technicians' careers have been changing and growing. They have evolved to the point where technicians are now highly skilled scientific professionals with increasing responsibility. Technicians are critical members of scientific teams. Their workloads and responsibilities require a knowledge of chemistry and expertise with lab equipment. Technicians may be part of a team with a senior scientist. But, they also work independently—conducting experiments, compiling results, and writing procedures. Their work provides chemists with valuable information to review. This atmosphere of increasing responsibilities and opportunities is making a career as a chemical technician more rewarding than ever before.

... Play an integral role in the chemical industry

Chemical technicians bring valuable skills to the development of new products, processing methods, and materials.

As critical members of teams of chemists and chemical engineers, they are at the heart of operations in the chemical industry. They are responsible for helping to get products and services out the door to customers. One of the rewards that chemical technicians enjoy is seeing new products advertised and in the market, and knowing they were part of the team that created them.

... Have advancement potential

Chemical technology may appeal to those who have an interest in chemistry but do not initially want to spend four or more years getting a bachelor's or advanced degree. Because the chemical sciences encompass so many fields, chemical technicians often specialize in one industry, such as industrial chemicals, fuels, agricultural products, food processing, pharmaceuticals, paints, fuels, or metals.

In the past, most chemical technicians were trained on the job. Today, industry demands a solid foundation in applied basic chemistry and math, plus experience using various kinds of standard labware. The best preparation is a two-year associate degree program. Some companies hire chemists with a B.S. degree as technicians, but in many cases, employers say this is not necessary.

Companies are using chemical technicians in many new ways. Even such a nontraditional position as compliance auditor might draw heavily upon a technician's chemical training. Employers look at such things as adaptability, organizational skills, personal motivation, customer focus, and teamwork when they consider advancing a chemical technician into a new position. Because the field includes so many possibilities, students need to evaluate the opportunities available as they would any other career path, thinking about their skills, interests, and the areas of chemistry they prefer. Expanded research and development responsibilities have increased the need for skilled science technicians, expanding the job market and giving it excellent potential for job satisfaction. Many companies also provide the opportunity to pursue additional education, even to a bachelor's degree or beyond.



American Chemical Society, Education and International Activities Division,
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Originally produced with funding from the Alfred P. Sloan Foundation as part of its Science Career Cornerstone Series.

FACT FILE: Chemical Technicians

WORK DESCRIPTION ► Chemical technicians work in every aspect of the chemical process industry, from basic research to hazardous waste management. Research and development technicians work in experimental laboratories, and process control technicians work in manufacturing or other industrial plants. Technicians operate many kinds of equipment and instrumentation, set up apparatus for chemical reactions, prepare compounds, monitor commercial production, test for product quality, and collect and analyze samples produced through organic synthesis. They conduct a variety of laboratory procedures from routine process control to complex research projects. Technicians also work in data management, quality control, and shipping to provide technical support and expertise for these functions.

WORKING CONDITIONS ► Chemical technicians are vital members of self-directed work teams. They sometimes work independently. Most are hired on a "nonexempt" basis—that is, they work a 40-hour week and are paid overtime for additional work hours. The workday can be very long when it involves big projects. Chemical technicians tend to be on the move during the day, with a variety of responsibilities. They often report to more than one person. Most technicians work indoors, but a few work outdoors taking samples and measurements.

PLACES OF EMPLOYMENT ► Chemical technicians are a vital and growing part of the industrial work force at chemical, engineering, and oil companies. They are employed by federal, state, and local governments, including national research laboratories and government science agencies. Academia employs a few technicians. Although the chemical industry employs the largest number of chemical technicians, some work is available in related industries such as polymers, electronics, biotechnology, consumer products, pharmaceuticals, paints, soaps, and fragrances. Some companies have well-defined career ladders for technicians, but generally, dedication and hard work are the main criteria for advancement. Skills are often transferable, and technicians today are more able to move between companies than they have been in the past.

PERSONAL CHARACTERISTICS ► Technicians are people on the go. They often work in more than one laboratory, monitoring experiments and procedures. They must be able to manage multiple projects simultaneously. Chemical technicians' interest in scientific and technical areas helps them understand their jobs. They have high mechanical aptitude, are creative, and have good observation skills. They describe themselves as problem solvers and say they are self-starters with the ability to think for themselves. Technicians are people who are able to work with their hands, think analytically, and pay attention to detail. Other important qualities include a desire to learn new skills, a willingness to accept responsibility, and a commitment to finishing projects.

EDUCATION AND TRAINING ► A solid background in applied basic chemistry and math is vital, along with skill in using various kinds of equipment and standard labware. An associate's degree in applied science (A.A.S.) or chemical technology is the best preparation for work in the field. Technicians with such degrees are attractive to employers because they have scientific knowledge and laboratory skills and require less on-the-job training. Many community and two-year colleges offer this degree. Without an A.A.S., most employers prefer two years of specialized training. Take chemistry and math courses. Develop computer skills and written and verbal communications skills.

JOB OUTLOOK ► Technicians hold positions with responsibilities that were once only assigned to Ph.D.s and engineers. The field is changing and expanding, and the demand for qualified technical workers will keep job opportunities growing. Particularly strong areas of growth are the medical, biotechnology, and environmental management and testing industries. Government laboratories will be tougher places to find jobs because of funding cutbacks and incentive programs for retaining the present workforce.

Some employers hire technicians on a temporary basis without benefits, such as health insurance, even though some temporary assignments last as long as a few years. Demand for chemical technicians will continue to increase as automation, new products, and complex production processes become more sophisticated in the chemical industries.

SALARY RANGE ► Chemical technicians with an associate's degree command good starting salaries. Salaries vary by geographic location, the technician's education and experience, and the type and size of the company. The good news is that salaries have increased for chemical technicians as responsibilities have increased. In 1995, 45% of new technicians earned \$28,000 or less; in 2002 the median salary was \$30,000. Experienced technicians earned between \$30,000 and \$37,000 per year. Technicians with 6–10 years of experience earned between \$37,000 and \$48,000 a year. Some senior technicians at large corporations earn as much as \$53,000 annually.

FOR MORE INFORMATION

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WHAT TO DO NOW ► Take courses in chemistry and gain experience using various laboratory equipment. Technicians in the field today emphasize considering a position as a chemical technician as a career move. Determine what areas of chemistry are of most interest to you first, and then seek out work experience or academic expertise in these areas while remaining open to other opportunities that may cross your career path.