

COLUMBUS

# C.E.O.

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## The Catalyzer

**BOB MASSIE** has solidified  
*Chemical Abstracts Service* as  
*both an industry and civic leader*

# The Chemistry Set



Led by CEO Bob Massie, **Chemical Abstracts Service** is a global leader among chemical information suppliers—and a major civic force in Central Ohio.

By Jennifer Wray

The grass on the lawn of Chemical Abstracts Service was damp, the air warm as calypso singer Harry Belafonte took the stage for a Columbus Symphony Orchestra Picnic with the Pops concert on a lovely summer evening 17 years ago. During his set before an audience of 13,000, recalls Chemical Abstracts president and CEO Bob Massie, Belafonte posed a question. “He would say, ‘Chemical Abstracts, what do they *do* in those buildings?’ ” Massie says, his voice imitating the singer’s Caribbean lilt.

Chemical Abstracts’ sprawling, 54-acre property on Olentangy River Road, near the campus of Ohio State University, has hosted CSO’s Picnic with the Pops for 28 years. CAS is one of Central Ohio’s major employers and a significant presence on the civic scene, with corporate reach that extends around the globe. Still, it’s safe to say that most people who pass the three-building CAS campus on their daily commute or take in a summertime concert on the lawn know little about what goes on inside the walls.

So, what *do* they do at Chemical Abstracts?

## Campus Connections

When Chemical Abstracts was formed 103 years ago, its work was fairly straightforward: compile and publish chemistry-related information. Initially the only product was *Chemical Abstracts*, first published by the National Bureau of Standards and the University of Illinois. Not long after its founding, CAS moved to the Ohio State University campus when its editor joined the OSU faculty. The company became a division of the American Chemical Society (ACS) in 1956 and moved to its permanent home on the banks of the Olentangy River in 1965.

In its early years, Chemical Abstracts relied on volunteer abstractors—as many as 3,200—to edit and index abstracts on index cards. In its first year, Chemical Abstracts published fewer than 12,000 abstracts. In 2006, it published 1 million.

The days of volunteer abstractors and index cards are long gone. Now the company boasts server upon server holding the data of its two primary databases: CAplus and CAS Registry. CAplus holds bibliographic information and abstracts for all articles in chemical journals worldwide, plus chemistry-related articles from scientific journals, patents and other publications.

The CAS Registry, created in 1957, contains information on organic and inorganic substances, as well as protein and DNA sequences. Each receives a unique registry number, index name and visual representa-

tion of its chemical structure. Massie calls the registry “the single most comprehensive collection of molecular information in the world in history.”

The service employs more than 1,400 staffers—including biologists, chemists and information scientists—at the Columbus campus and offices in North America, Europe and Asia. Key to Chemical Abstracts’ success is the ability to identify and record the chemistry in patents that standard search engines would overlook. Proprietary technology systems developed by CAS help its editorial staff collect and verify the accuracy of information gleaned from more than 10,000 major scientific journals and from patents issued by 60 patent authorities around the globe. Some patent documents hit CAS databases as soon as two days after they’re issued and are fully indexed in four weeks.

The end results are databases that are considered by many to be the gold standard when it comes to chemical information. CAS’s website includes testimonials from top scientists such as Nobel Laureate Robert Grubbs, a chemistry professor at the California Institute of Technology. “You will not find too many businesses that have endorsements from Nobel Prize winners on their website,” Massie says.

In September 2009, CAS added the 50 millionth substance to the CAS Registry, a

milestone that illustrated the “accelerating pace of scientific knowledge,” the company said in a press release. It took 33 years for CAS to register its 10 millionth compound, but less than one year to go from 40 million compounds to 50 million.

Much of what Chemical Abstracts has done in the last half-century would have been impossible without quantum leaps in computing capacity. In the 1960s, the organization embraced the use of electronic databases as a publishing tool, and by 1970, all its indexes were organized and composed by computer. In 1980, CAS made direct online searching available for researchers and scientists.

In 1983, CAS teamed with FIZ Karlsruhe, a German company, to create the Scientific & Technical Information Network, designed to give information professionals access to information on chemistry, life sciences, engineering and patents. In 1995, CAS’s SciFinder software gave scientists direct access to the company’s databases without requiring that they learn a command language. SciFinder Scholar, a version of SciFinder designed for academic institutions, is now used at nearly 1,900 colleges and universities worldwide.

Battelle researchers use CAS products “to do their homework, to know what’s already doing within an area. ... Perhaps there’s already been a solution out there that

somebody’s developed,” says Greg Bowen, a Battelle vice president who manages the institute’s analytical and environmental chemistry product line. “We used to have to look this stuff up manually. Now, the fact that it’s all online and instantly searchable makes the whole work of R&D faster.”

In the pre-digital age, Chemical Abstracts indexes were distributed mainly in print. In 1975, for example, 95 percent of revenue came from print services. By 2006, that proportion had flipped, with electronic sources bringing in 95 percent of revenue. And so, on Jan. 1, 2010, CAS ceased printing the venerable *Chemical Abstracts*. Vice president of marketing Chris McCue says the cost of paper, printing and shipping made the publication financially unviable. “Some senior chemists got a little emotional about it,” McCue says. “They understood the business reasons, but it was just like, ‘Boy, I spent my whole career using this.’ And now we’re happy to tell them, ‘Well gosh, try SciFinder. You can do what you did and do it, frankly, a lot more effectively.’ ”

## At the Helm

Shepherding Chemical Abstracts through the digital revolution has been Bob Massie, who left the CEO slot at Gale Research, an information services company, to join CAS in 1992. Less than a year before Massie landed the job, five-year boss Ronald Wigington had been demoted to director of technology. During Wigington’s tenure, staffers had threatened to unionize, complained about health insurance coverage and protested the elimination of 73 jobs.

From disorganization and discontent, Chemical Abstracts moved swiftly under Massie’s leadership toward a more businesslike, less bureaucratic structure. “What I think is interesting about this time was the



A Picnic with the Pops event



COURTESY CHEMICAL ABSTRACTS SERVICE (4)



American Chemical Society looked at CAS and decided that in order for it to prosper in the modern era and really to fulfill that mission, its governance structure needed to be changed,” Massie says.

Massie credits “farsighted leaders” at the ACS for creating a new, business-oriented governing board for Chemical Abstracts. Previously, he says, CAS was “a public organization inside a society that was run in committees. Let me put it this way: It didn’t create an atmosphere that was most likely to help people here succeed. Personally, we’ve all benefited from those great decisions.”

Massie says people—not just gee-whiz technology—provide CAS its depth and breadth. He notes proudly that nearly 60 different languages are spoken at the company, and estimates the average tenure of a CAS worker is 15 to 20 years.

Many CAS workers are Buckeyes. “We have over 220 staff with degrees from the Ohio State University, and we have very close ties there,” he says. OSU President Gordon Gee calls Massie “very smart, highly respected. Folks in these kinds of positions can be isolated and very arrogant. [He] is neither.”

Jay Jordan, CEO of OCLC Online Computer Library Center and a member of the ACS governing board for publishing, says Massie “is exceptionally intelligent. He’s focused and he’s never satisfied.” Then,

presumably in jest: “I wouldn’t want to work for Bob.” Jordan says Massie “cares a great deal about the community. He’s got pretty darn high energy levels, so you don’t get him at the end of the day and he’s too tired to contribute—that’s not Bob.”

“Underneath it all, Bob’s got this really wry and witty sense of humor,” says Alex Fischer, president and CEO of the Columbus Partnership, Central Ohio’s most formidable civic organization. Fischer says Massie is a mentor, “constantly learning, and constantly teaching. He’s quiet, but he shows extraordinarily effective leadership.”

## Civic Activities

In the mid-2000s, Massie was among those who led the merger of the Columbus Technology Council, which he chaired; the Business Technology Center; and the Science and Technology Campus Corp. Massie “was an early leader in pulling together all of the organizations that now form TechColumbus,” says Fischer. “He did that quietly and steadily, and it’s yielding great benefits.”

“I’m personally very devoted to TechColumbus and the idea of TechColumbus—that is that economic development in the 21st century will be primarily driven by technology and the monetization of technology and the commercialization of technology,” Massie says. “My colleagues and I felt that we needed a technology-centric com-

munity organization that can advocate, support and unify the technology interests in this town. We created it in TechColumbus, and TechColumbus is a national leader at what it does.”

The talent CAS brings to Central Ohio “adds to the talent base regionally” says Ted Ford, president and CEO of TechColumbus. CAS “is truly world-class,” Ford says. “The fact that they’re located here is a boon to this corridor.”

Massie is also one of the 38 members of the Columbus Partnership. “When the word ‘technology’ comes up, when the discussion turns to technology-based economic development, when we talk about our new economic development plans and how to leverage our assets, the room turns to Bob,” says Fischer.

More visible to many than Chemical Abstracts’ economic development efforts is CAS’s nearly three-decade relationship with the Columbus Symphony Orchestra’s Picnic with the Pops. “We are truly partners in this. They have just made the production of this concert series so easy for us,” says Susan Rosenstock, CSO general manager. “We couldn’t do it without Chemical Abstracts, the management and the staff. They’ve just embraced this and helped things go so smoothly.” Massie, she says, “is a remarkable man, and he so believes in this.”

Then there’s Pelotonia, a bicycling event that raises money—\$4.5 million in 2009—for OSU’s Comprehensive Cancer Center-Arthur G. James Cancer Hospital and Richard J. Solove Research Institute. In both 2009 and 2010, CAS committed to host a Friday evening celebration and the Saturday morning launch of the ride. “Aside from the obvious, which is they have one of the best pieces of land around, they’re a leader in the fight against cancer as well,” says Pelotonia executive director Tom Lennox.

“Cancer will be cured at the molecular level,” Massie says, and Chemical Abstracts is all about molecules. Moreover, the James is a mere three minutes away. Massie says he’s proud of the message on the banner that’s hung each year on a CAS building: “The cure for cancer starts with research. Research starts with CAS.”

## Competition & Litigation

With nearly \$300 million in 2009 revenue, Chemical Abstracts is a substantial business and a major player in the chemical information field. But it’s not a field CAS has all to itself. Companies such as Amsterdam-based Elsevier, a publisher of medical and scientific literature, and Thomson Reuters, a

broad-based information services conglomerate, would like to wrest a greater share of the market. CAS also competes with other not-for-profit entities such as PubChem, a free, open-access chemical compound database maintained by the National Institutes of Health’s National Center for Biotechnology Information.

Michael Toussant, senior vice president of editorial operations at CAS, says competitors provide useful chemical information for some purposes. “But,” Toussant adds, “if you want to really do professional research and you need to rely on it, and your company is relying on it, and you’re going to rely on it in the laboratory to make sure that it’s not going to harm you or harm your company, then you want to go to a very reputable source, and that’s what we’ve provided, I think. So, we certainly haven’t ignored the Googles and the PubChems and others of that world. In fact, we’ve looked at them carefully. Where they’ve identified for chemists some things where chemists have said, ‘Maybe that’s useful,’ we try to find that facet and enhance our product with it.”

Inevitably, a business that grows to the size of CAS winds up in legal battles now and then. Most recently, in mid-June, an Ohio appellate court upheld a 2008 Franklin County Court of Common Pleas judgment against the ACS and in favor of research software provider Leadscope and its three founding scientists.

The society had sued Leadscope and the scientists in 2002, claiming that the three—all former CAS employees—stole trade secrets by patenting software that enabled drug companies to shorten the process of developing new medicines. In 2008, a common pleas court jury found that Leadscope had not misappropriated trade secrets, and that the ACS had brought the claim in bad faith. The jury awarded Leadscope and its founders damages totaling more than \$34 million on their counterclaims for defamation, unfair competition and tortious interference.

“We were disappointed and respectfully disagree with the decision,” says Glenn Ruskin, director of public affairs for the ACS. “We will have to review it and decide what our next course of action is.”

In 1990, Dialog Information, a Knight-Ridder subsidiary, sued the ACS for \$150 million, claiming the nonprofit violated antitrust laws by attempting to monopolize access to chemical literature. The ACS countersued for \$40 million, saying Dialog—one of CAS’s largest customers—owed it for the use of chemical abstracts. The matter was settled out of court in 1993.

In 2004, the ACS sued Google, claiming

that the company’s free “Google Scholar” journal search infringed upon a name the ACS had in the marketplace for years, SciFinder Scholar. That case settled in 2006, and Google Scholar remains available.

## Global Reach

CAS has had an international scope since the start—Massie posits it may be Columbus’s first truly global organization—and researchers outside the United States are becoming increasingly relevant in the world of chemistry. Already, more than 55 percent of CAS revenue comes from outside North America.

In November, CAS announced that China’s patent office had become the world’s leading producer of patent applications in chemistry. China’s emergence as a dominant player comes at a time when worldwide applications for chemical patents have seen great growth. According to the CAS announcement, 35 percent of new patent invention applications involved chemical substances, and the number of chemistry-related patent publications by the U.S. Patent and Trademark Office and the World Intellectual Property Organization grew by more than 500 percent over the last decade. Over the same 10 years, Chinese patent applications were up by nearly 1,400 percent, with much of the growth occurring in the pharmaceutical sector.

The flow of new chemical information—as well as the demand for it—only looks to grow. “The monetization of science and the desire to protect intellectual property through patenting is going to continue to be a strong force throughout the world,” says Toussant. To cope with surging demand, CAS has added 355 jobs in the last four years. “I think it’s safe to say that globally, we have not experienced a research and development recession,” Toussant says.

Though it remains tops in its field, CAS hasn’t rested on its laurels, says Jordan. The company, he says, continues to “enhance—almost revolutionize” the chemical information business.

“What I’d like for people to understand is this is a real business,” says Massie. “It’s a competitive business. We have to provide an information product to people who are willing to write checks for it. We get no grants, no funding; we are tax-exempt, but we have to operate in the commercial marketplace. It’s a really great place, and I think it’s great for Columbus. We’re proud to be in Columbus, and we hope Columbus is proud of us.” ♦

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