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on Communities

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The Real Economic Threat

By Richard Florida, Ph.D.

In the last two years, and especially since the heated 2004 presidential election, it has become commonplace for politicians, pundits and the populace to bemoan the emerging economic threat posed by China and India. The hand-wringing only increased earlier this month when China and India announced a new "strategic partnership."

Why all the anxiety? Among the greatest fears is that outsourcing, which has thus far affected mostly lower-skill jobs in fields like data processing, is beginning to move upstream to threaten higher-wage, high-skill jobs—the jobs upon which American prosperity and many citizens' dreams are based.

Though outsourcing is understandably distressing to many, history teaches us that it is manageable, if we are able to create a new tier of jobs derived from cutting-edge technologies, ideas and industries. What should really alarm us is that our capacity to create these new technologies and industries is being eroded by a different kind of competition: the competition for highly skilled, highly educated global talent.

China, India and other countries will, of course, continue to grow rapidly and take away many low-paying—and even some high-paying—American jobs. But, increasingly, it is Canada, Australia, and the Scandinavian and Northern European nations that are stealing our real thunder.

Consider a few indicative trends:

A growing number of countries are increasing their efforts not just to retain their own talent, but to draw economic advantage from around the globe. Immigrants already make up about a quarter of the high-skilled workforce in Australia and about 20 percent in Canada—compared to less than 10 percent in the United States.

By the mid-1990s, the European Union had already surpassed the United States as the largest producers of scientific literature. In 2001, Western Europe researchers generated 229,000 articles compared to 201,000 in the United States, 57,400 in Japan, and 42,700 in the rest of Asia. In physics, the U.S. lead fell from 61 percent of all publications in 1983 to 29 percent in 2003, according to *Physical Review*, a series of top physics journals.

In July 2003, the *New York Times* reported that Brazilian students, long a source of talent for U.S.



Jeroen Oerlemans Fotografie

Richard Florida, Ph.D.

MBA programs, were increasingly choosing European business schools. An eminent Oxford University professor told me that he had never seen such impressive applications for graduate study, and that most of the improvement had come from international students who were choosing Oxford instead of top American universities.

Roger Pedersen, one of the world's top stem cell researchers, recently left his position at the University of California, San Francisco, to take up residency at the Centre for Stem Cell Biology Medicine at Cambridge University in the United Kingdom. His concern was that tolerance for scientific exploration is rapidly eroding in the United States, while other countries are opening their arms, minds and pocketbooks to capture a spot in the leaders' pack. Pedersen wasn't the first such scientific casualty, and he certainly won't be the last.

Such examples are but a handful of the alarming warning signs. The point is this: Top talent is migrating to open, diverse and tolerant cosmopolitan centers the world over. The United States no longer has a lock on this highly mobile talent pool—and neither does any single supposed rising superpower.

Let me take one step back. In 2002, I argued in *The Rise of the Creative Class* that growth and prosperity rely on the 3 Ts of economic development: Technology, Talent and Tolerance. Very few people these days find the first two controversial. The importance of tolerance, however, is far from agreed upon.

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But if technology and talent are by now well-established drivers of economic innovation and wealth creation, the question remains: Why do certain places develop or attract more technology and talent than others? Put more simply, why do people choose the places where they live and work? The data analysis and focus groups I conducted led me to believe that the best way to explain the agglomeration of invention and innovation in creative centers can be boiled down to one thing: a place's openness to people.

The reason is pretty simple. Human creativity—the generator of technological, economic and cultural advancement—comes in all shapes and sizes, all ages and races, both genders and all types of family arrangements, sexual orientations, and moral or religious belief systems. The places most tolerant of the cornucopia of human lifestyles will naturally be most ready to tap the creative energies of the greatest number of people. Instead of hindering creativity, a place that is inclusive, diverse and open engenders it.

This brings me back to China and India, two traditionally less-tolerant societies, where too much experimentation—economic or otherwise—has long been frowned upon. The remains of India's caste system, though it serves its own purpose, are detrimental to mobility and creativity. China, in addition to a similar social stagnation, has a tendency to crush creativity with a repressive political atmosphere.

This is not to say that either of these places is wholly intolerant, that there aren't pockets of incredible innovation and productivity tucked within both, or that official rules and regulations are the only factors holding them back. On the contrary, both are becoming at least more outwardly open, especially India. But there persists in China and India a highly pervasive intolerance towards dissent and rebellion, two crucial sidekicks to creativity.

The resulting self-conscious censorship has both positive and negative effects; it is well-known, for instance, that Chinese and Indian students excel at mathematics and in more rigorous analytical fields. Until they deal with the tolerance factor, though, China and India will only go so far in attracting the best and the brightest from around the world.

In the meantime, the United States has dropped the ball on remaining at the forefront of the global

economy. With cuts in education spending, and research and development, tightening visa restrictions, a chilled foreign policy and a level of economic inequality that makes it impossible to tap the full creativity of the populace, America is in desperate need of the kind of leadership that can put forward a New Deal for the creative age.

Instead, our leaders are mired in polarizing politics, cultural and moral arguments not usually the providence [sic] of government, an understandable but overzealous concentration on physical security, and a myopic preoccupation with China and India.

Just as the United States' obsession with the Soviet Union in the final years of the Cold War caused us to miss the emerging economic challenge posed by Japan, our eyes are not currently on the biggest threat to American economic might. That threat lies at the cutting edge, and it is growing every day.

*Richard Florida is a professor at George Mason University's School of Public Policy and author of the new book *The Flight of the Creative Class: The New Global Competition for Talent*. ❖*

Tracking the Talent

In 2002, economist Richard Florida wrote *The Rise of the Creative Class*, which described concern with competition between U.S. cities to attract and retain skilled workers. He's now back with a sequel, *The Flight of the Creative Class: The New Global Competition for Talent*. His new book explains that the real contest in today's global economy is not a competition for trade or the flow of goods across borders or China turning out low-cost products, but rather one involving who can attract, retain, and harness the energy of creative people—in other words, a global competition for talent.

According to Florida, the United States—long the preferred destination for the world's top entrepreneurial, innovative, scientific, artistic, and cultural talent—is for the first time losing a key historical advantage. Other nations are attracting creative talent because they have greater tolerance for alternative lifestyles. He adds that this country is driving away foreign talent from American universities and companies with tighter immigration and visa laws.

A Q&A with GDEcD's Chris Clark

The Georgia Department of Economic Development (GDEcD) has long been a key partner of EDTV in fostering economic growth across the state. Here, Chris Clark, the department's deputy commissioner of Global Commerce, discusses some of GDEcD's initiatives and services and offers insight into the role of innovation in economic development.

Focus: What is GDEcD's mission, especially regarding local economic development?

Clark: Our mission is jobs—capturing, creating, and sustaining them.

Focus: What do you see as the most critical issues and key challenges facing Georgia today?

Clark: Certainly one is transferring Georgia's economy from labor-intensive to knowledge-based, while retaining traditional jobs. Georgia has a wonderful workforce, but improving workers' science, math, and language skills is more important for today's workforce than our traditional skills. That's why it is important for us to work closely with our universities, technical colleges, and Department of Education.

Focus: What do you see as Georgia's competitive advantage(s) going forward in the 21st century?

Clark: I would say international connections combined with innovation. For example, our Centers of Innovation program is leveraging our business clusters, and their global interconnections will prove to be a competitive advantage for Georgia. Our competitive advantage also is our location. Georgia is the center of global commerce and the most culturally diverse environment in the region. It's the crossroads of the Americas by air, land, and sea, with the world's busiest airport, two deepwater ports, and the most extensive surface transportation network in the country.

Georgia continues to draw significant interest from the international marketplace. In 2004–05, international companies accounted for 40 (or 28 percent) of the 143 new investment projects. Of these,



Georgia Department of Economic Development

Chris Clark

23 were European investments and 10 were Japanese. Also, in the past three years, Governor Perdue has led trade missions to Asia, Europe, and Central America. As a result, companies such as Honda, Toyo Tires, Hyundai, Kia, and Porsche have chosen to locate portions of their businesses in Georgia.

Focus: Is Georgia particularly well-suited for certain types of businesses/industries? If so, which ones, and how does this differ by region in the state?

Clark: Governor Perdue is focused on growing strategic industries in Georgia. Our six innovation centers across the state streamline our efforts, providing support to the six top industries in the state. Currently, these are aerospace (**Warner Robins**), agriculture (**Tifton**), information technology (**Columbus**), life sciences (**Augusta**), maritime logistics (**Savannah**), and manufacturing (**Gainesville**). By leveraging Georgia's homegrown industries, the state is creating new jobs, increasing investment, and ensuring long-term economic opportunity. Lonice Barrett, the governor's director of implementation, and GDEcD Commissioner Craig Lesser are leading efforts to identify new strategic clusters for Georgia.

Focus: How does GDEcD support community efforts to retain and grow existing businesses and industries and attract new industries?

Clark: GDEcD supports such efforts by working with the General Assembly to pass economic development legislation. This year, several pieces of legislation passed that will aid Georgia in its quest to bring in more business. For example, we are fundamentally changing the way we tax companies in Georgia. The Single Factor Corporate Tax changes the method used to compute corporate taxes from a system based on three different items to one based solely on sales, saving Georgia companies more than \$1 billion over the next decade. Georgia is the first state in the Southeast to adopt such a taxation program.

In addition, the Small Business Tax Relief Amendment will allow small businesses making capital investments to write off a greater amount of those expenses in the current year, lining up with the federal tax law and saving Georgia businesses an estimated \$25 million over the next three years.

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Also, the Existing Industry Incentive Bonus Amendment allows a \$500 per job tax credit bonus for each new full-time position created by existing Georgia businesses, and this is on top of the jobs tax credit already available to new and existing companies. And the Life Sciences Fund is helping to position Georgia as a national leader in university research that leads to entrepreneurial firms in the life sciences by providing financing that allows such companies to expand and grow in Georgia. Funding is being increased by \$2 million.

In other areas, GDEcD's regional project managers work with community leaders to develop economic development opportunities in various regions of the state.

Also, our International Trade Division is working hard to locate export opportunities for Georgia businesses. Exports in 2004 were up an amazing 21 percent over 2003, to \$19.6 billion. We almost doubled the national growth rate of 13 percent. Our largest markets continue to be Canada, Japan, and Mexico. And our efforts to recruit the Free Trade Area of the Americas Secretariat and position Georgia as the best place in the Americas to do business continue to pay dividends.

Focus: What are some of the other services GDEcD provides to foster community economic development?

Clark: The Entrepreneur and Small Business Development Office emphasizes entrepreneurship and job retraining as ways to spark economic development. In areas where there is heavy job loss, these two options have proven successful. With help from sister agencies and other partners, workers are retrained in new skills that offer them an opportunity to re-enter the workforce. Other displaced workers are given the route of entrepreneurship as an option.

More than 97 percent of all Georgia businesses have fewer than 50 employees, and most of Georgia's job growth is a product of their success. Simply put, Georgia's economy is only as strong as our small businesses. To that end, we created the Georgia Entrepreneur and Small Business Coordinating Network so that state agencies and their federal partners could better coordinate and cross-market their programs, leverage resources, and bring entrepreneurs to the table in hopes of providing better services for the citizens of Georgia.

Focus: What have been the network's initiatives and accomplishments to date?

Clark: The regional marketing managers have made calls to 87 percent of Georgia's 159 counties to bring awareness of entrepreneur and small-business resources and to understand local efforts.

Also, in partnership with GDEcD's regional staff and Georgia Tech, we have launched a community-based program designed to develop an entrepreneur culture and sustainable entrepreneur and small-business support initiatives. Eighteen communities are engaged in some level of this program, and eight of those—**Douglas-Coffee County, Valdosta-Lowndes County, Fannin County, Ashburn-Turner County, Adel-Cook County, Toombs County, Montgomery County, and Tattnall County**—have completed the process and each has been designated an "Entrepreneur-Friendly Community (EFC)." The latter three counties represent the first EFC regional effort.

With the addition of the Governor's Small Business Center (GSBC) team, we continue to offer access to information and bid opportunities to small-business owners in the state wishing to become vendors to state government agencies. This team also administers the Governor's Mentor Protégé Program (www.state.ga.us/mentorprotege), which partners small and large businesses in Georgia for an 18-month period of training, business development, and relationship building.

Focus: What advice would you give to a local economic developer preparing his/her community for economic growth?

Clark: First and foremost, they need a strategic plan. That plan should encompass more than simply putting up a spec building. They need a small-business component, a tourism component, and a strong existing industry program of work. They also need to explore film location opportunities, trade, downtown development, redevelopment, environmental protection, leadership development, and education.

Second, they need to know their state and regional partners. In the end, this business is about relationships, and successful communities leverage those friendships and build strong partnerships. ❖

Alpharetta in the Zone

Throughout the nation, planners are beginning to realize that residential developments generally cost more to service than they generate in new taxes and fees, a situation that applies to booming metro **Atlanta** communities as much as anyplace else. However, the methods used to determine this relationship have typically relied on anecdotal information and interviews with city service providers such as police and fire departments.

Recently, researchers at Georgia Tech's Economic Development and Technology Ventures (EDTV) completed a study for **Alpharetta** that provides community planners there with better insight into the fiscal implications of rezoning undeveloped land from office to high-density residential. The approach was based on path-breaking statistical analysis using data from the Georgia Department of Community Affairs and property tax digest data from the Georgia Department of Revenue.

The project entailed three primary tasks:

1. Analyses of tax digest data to determine developed property characteristics and developable acreage by zoning class.

2. Estimation of a set of forecasting equations, sensitive to changes in residential, commercial, and industrial property values, for specific city-level revenue and expenditure categories.

3. Development of an analytical tool using data from the first step, equations from the second, Alpharetta city revenue and expenditure patterns, and demographic data. The tool is based on EDTV's Web-based application, WebFIT™, and contained in an Excel spreadsheet.

Researchers worked with Alpharetta officials for about six months as they entered data and made changes to the tool. Once the adaptation was complete, city leaders could see the impact rezoning had on their revenues and expenditures.

"I think the best thing is that it is a new tool that helps us do our job better," says Diana Wheeler,

community development director for Alpharetta. "It's a growth management tool, and we needed that. When people come and ask us about changing use on property, we want to give them an answer based on something factual. Thanks to Georgia Tech, we now can do that."

The tool originally was designed to analyze countywide impacts, and has been used by **Gwinnett, Paulding, and Fayette** counties. By modifying the program, EDTV researchers could help Alpharetta officials get the information they needed to evaluate the proposed land-use changes. With the model, they can run any number of scenarios they want to investigate rezoning issues. This effort could pave

the way for other cities to tap this tool for the information they need to stay fiscally healthy. ❖



Gary Meek

EDTV's Robert Lann (left) examines an Alpharetta map with Mayor Arthur Letchas and Community Development Director Diana Wheeler.

Developers: The Next Generation

To help educate the next generation of economic developers, EDTV is offering three summer internships in innovative economic development. These 10-week paid internships involve working on a single, in-depth research or implementation project devised jointly by the students, EDTV staff, and faculty advisors. Possible examples include: (1) strategies to promote innovation in a rural region or mid-size city, (2) new opportunities for business development in inner city neighborhoods, (3) strategies to encourage quality growth via enhanced decision-making tools, among others. For summer 2005, EDTV has hired three interns whose projects will address: (1) the relationship between Georgia initial public offerings and entrepreneurial outcomes, such as wealth and job creation; (2) the presence and growth potential of the multimedia industry in Georgia; and (3) the presence and growth potential of the modeling and simulation industry cluster in Georgia. The students were selected by a team of economic developers.

Calibrating for Economic Development Excellence

Often, economic developers need guidance and assistance on key operational issues such as strategic planning, using technology to boost productivity, budgeting, and professional development, among others. They want to operate as effectively as possible and also be able to track their performance. Georgia Tech's recently devised Calibration Program assists them in doing just that.

The program is a new service developed in partnership with the Georgia Rural Economic Development Center at East Georgia College. It has been designed to help economic development organizations achieve higher performance and excellence drawing on quality management standards from the International Economic Development Council's (IEDC) Accredited Economic Development Organization (AEDO) program, the International Standards Organization, and the Malcolm Baldrige National Quality Program.

The Calibration Program enables economic development organizations to: (1) determine the need for change or to implement corrective action to resolve inefficiencies, (2) make informed decisions regarding allocation of resources, and (3) develop and utilize key quality management tools for achieving ongoing operational excellence. The program's services include a quality management online self-assessment, a gap assessment conducted by a Georgia Tech specialist, development of recommendations for enhancing the quality management system, and various forms of implementation assistance.

Georgia Tech's Economic Development and Technology Ventures (EDTV) recently entered into an agreement with the IEDC to help prepare Georgia economic development organizations for the AEDO process through the Calibration Program. Organizations earning the AEDO designation are recognized for their excellence among the international economic development community.

In June, EDTV launched a series of Calibration Program pilots with several economic development organizations representing communities around the state—**Albany-Dougherty County, Bulloch County, Carroll County, Coffee-Douglas County, Dublin-Laurens County, Jefferson County, and Stephens County.** ❖

Partners Join Forces to Help Barrow County

Georgia Tech, the University of Georgia, the Georgia Department of Community Affairs, and the Georgia Electric Membership Corporation have teamed up to assist the Winder-Barrow County Development Authority with economic development planning. The planning process will be placed in a regional context, allowing **Barrow County** to fully capitalize on initiatives such as the 316 Bio-Tech Corridor, nearby I-85 interchanges, and phenomena such as the growth of metro Atlanta, even as it maintains its own quality of life and sense of place.

Part of the Atlanta MSA, Barrow has maintained its rural character. The county seat, **Winder**, is located east of **Gwinnett County** just off State Highway 316 and nestled between **Athens** and **Atlanta**. The county was named for David Crenshaw Barrow, a University of Georgia professor who later became chancellor. Once Indian territory, Barrow is now home to Fort Yargo State Park, the most visited state park in Georgia; Chateau Elan; and the Georgia Club. Other cities here are **Auburn, Bethlehem, Carl, Statham**, and part of **Braselton**.

The project includes activities such as interviewing community stakeholders and statewide developers and producing an Economic Development Report Card. The latter represents a review and analysis of key demographic, social, health, educational, and economic data. The project also will cover such things as land use assessments, retail planning, zoning evaluation, and targeted development planning. Coaching for implementation is part of the effort, as well.

The project began in April and is scheduled to be completed this fall, with implementation assistance finishing the following September. ❖



Georgia Department of Economic Development

Chateau Elan Resort in Braselton.

Camden Seeks Economic Diversification

Seeking an innovative but realistic plan to grow and diversify its economy and reduce dependence on Kings Bay Submarine Base, the Camden County Public Service Authority sought help from Georgia Tech. This effort is supported by a grant provided to Camden County from the U.S. Department of Defense, Office of Economic Adjustment. Borrowing from the successful Accelerator Program, the Tech team has begun an effort to:

- (1) evaluate current conditions and opportunities,
- (2) produce options for mutual economic development gain,
- (3) generate consensus among local key interests about how **Camden County** can best diversify its economic base and maximize its potential, and
- (4)



Georgia Department of Economic Development

Shrimp boats at St. Marys

work closely with community leaders to develop an actionable plan for moving forward.

Partnering with Economic Development and Technology Ventures (EDTV) will be Georgia Tech's Center for Quality Growth and Regional Development, a multidisciplinary think tank that addresses critical transportation and land use issues and disseminates innovative strategies for resolving them.

Camden is located in coastal Georgia off I-95 and, lies approximately two-and-a-half hours from **Savannah** and 45 minutes from Jacksonville, Fla. As of 2000, the county was home to 43,664 residents, and its two largest cities are **Kingsland** and **St. Marys**. Camden also includes the beautiful and largely unspoiled Cumberland Island.

The project will involve three phases of work during the remainder of 2005: (1) economic diversification feasibility assessments, (2) review of community capital and resources, and (3) strategy development and implementation. The goal is to provide a road map of innovative actions to achieve a diversified economy. ❖

Wired in Albany

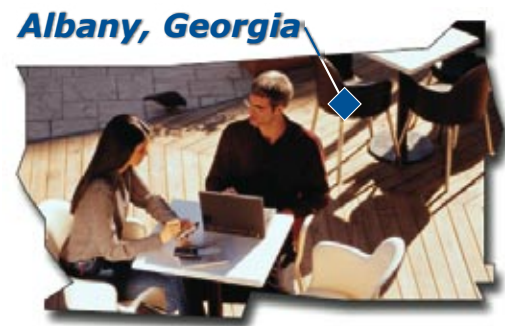
Information technologies (IT) such as computers and the Internet are rapidly becoming common fixtures of modern social and economic life, opening new opportunities and avenues for many Americans. Increasingly, people are using computers and the Internet at home, work, school, and other locations for an expanding variety of purposes.

According to **Albany** community leaders, for the region to be competitive it must continue to maintain a strong telecommunications infrastructure, talented IT resources who are leading the effort to apply technology, and a technology-literate workforce and initiatives that apply IT to achieve strategic community objectives.

The Albany-Dougherty Telecommunications Task Force was established in May 2003 to address the community's readiness to offer citizens and businesses the telecommunications technology infrastructure necessary to be personally and economically successful in the 21st century. Since then, EDTV has provided technical assistance to the task force to help it fulfill its mission.

Composed of a diverse group of citizens with a broad range of expertise and experiences, the task force established a 12-to-18-month timetable for completion of its work. These efforts began with the definition of the current technology environment, fol-

lowed by establishment of a focused plan of work, and the formulation of final recommendations



to achieve the desired goals. In May, the task force submitted its findings to the Albany mayor's office. Among them were that this south Georgia metropolitan community (1) establish a telecommunications authority, (2) determine current and future demands for technology, (3) educate the public on the importance and value of IT, (4) develop a community resource guide, and (5) encourage technology service providers to participate in the economic development planning process. ❖

A New-Fashioned Web Raising

Technology specialists at Georgia Tech's Economic Development and Technology Ventures (EDTV) are helping Metro South, a regional economic development organization covering **Clayton, Coweta, Fayette, Henry, south Fulton, and Spalding** counties, with a "web raising." This is an unusual project because it focuses on developing the software infrastructure for Metro South's new website, which the organization can then enhance and expand as appropriate to meet its strategic goals.

The new website is primarily focused on industries and firms that are relocating or expanding and seeking a location with exceptional quality of life, access to Southeastern and global markets, and the benefits of a major metro location without the headaches. Metro South feels it provides these things, but prospects lack awareness of the region. To remedy this, the website will highlight the strength of existing industrial clusters in the region, while emphasizing Metro South's rich and diverse character.

Rather than building the website, EDTV is gathering basic data, defining the structure, and coordinating with a private firm that specializes in data-driven web portals. EDTV also will train Metro South members on how to maintain data on the website and identify ways that the portal can be expanded and improved. Look for future developments online at www.atlantametrosouth.org. ❖

Diversity and Development

In March, EDTV offered its first course on immigration-related economic growth. Multi-Cultural Facets of Economic Development attracted partici-



pants from Mississippi and Florida as well as Georgia—representatives of communities, banks, Small Business Development Centers, and workforce development groups. It was designed to help economic developers understand the dynamic opportunities presented by immigrants from across the globe setting up households and businesses in their communities.

Census data show that the South is increasingly a destination for immigrants. As of 2000, more than 25 percent of our country's foreign-born residents were Southerners.

Typically, immigrants expect to own and operate small businesses, making them terrific potential entrepreneurs. The course covered this aspect, as well as others such as multicultural leadership, the importance of international students, the role of multicultural associations, and deliberate redevelopment of an area into an international village.

Over the next several months, EDTV will work with the Georgia state Department of Economic Development's Small Business and Innovation Department to identify and share resources that can assist communities in developing the talent and skills arriving from all over the globe. For more information, contact EDTV's Martha Schoonmaker, CECD (404.894.0332) or GDECD's Gilda Watters (404.962.4026). ❖

Academics in Practice

Last spring, a Georgia Tech graduate class in public policy taught by EDTV's Jan Youtie delivered community profiles on four Georgia cities, and fellow students weren't the only audience.

On two mornings in late March, 15 students in four teams made half-hour presentations on **Augusta, Columbus, Macon, and Savannah**, and some two dozen economic development practitioners sat in. Another half hour of questions followed, and more discussion occurred during a subsequent breakout session.

"There was a lot of interchange between the students and practitioners," says Youtie, an adjunct associate professor in Tech's School of Public Policy, adding that the idea to invite the latter came from EDTV's Todd Greene, CECD, director of Community Policy and Research Services.

The sessions were the second round of presentations. The first, held a month before, reflected what students learned about fundamental methods of economic development analysis, for example, location quotients. Then they learned newer methods that focus on innovation and technology diffusion, such as occupational employment analysis, and the second round depicted these using the same cities. The final facet entailed picking non-Georgia comparison cities for benchmarking purposes. ❖

Mitigating the Meth Lab Mess

Illegal methamphetamine labs affect an area's crime rate, public safety costs, environment, youth development, quality of life, image, and economic growth. In 2003, more than 400 meth labs were shut down in Georgia.

To help first-responders deal with the hazards associated with makeshift meth labs, the Georgia Tech Research Institute (GTRI) has developed a training program that ranges from identification to protection to cleanup. This article describing that initiative comes from Georgia Tech Research News.

An epidemic of small-scale methamphetamine labs is creating a new hazard for public safety personnel who may be injured by the flammable solvents, toxic acids, and other hazardous materials used to produce the illicit drug in homes, apartments, hotel rooms—and even vehicles.

Contamination from these makeshift labs is also creating hazardous waste problems in rural communities that are often ill-prepared to deal with them. But perhaps the most environmentally worrisome aspect of the labs is the hidden hazard they may create for the unsuspecting new occupants of homes, apartments, and hotel rooms inadequately cleaned up after being used for meth production.

To help law enforcement personnel, emergency medical technicians, firefighters, and others deal with the threat from these clandestine drug laboratories, GTRI has developed a new training initiative that will teach these first-responders how to recognize the labs and protect themselves from the contents. The program, which includes training at a simulated meth lab, will also provide information about proper clean-up techniques.

"There is a lot of potential for harmful exposure for first-responders who may not be aware that they are going into a methamphetamine lab and may not know how to protect themselves from the hazardous materials that are there," says Ray Doyle, senior research scientist in GTRI's Health and Environmental Systems Laboratory (HESL). "An estimated 30 percent of the fires that departments are responding to are the result of methamphetamine labs. But firefighters may not know until they get into a building that there is a lab there."

Techniques for producing the highly addictive drug vary, but can include the use of such materials as lye (sodium hydroxide), red phosphorous, lithium metal, benzene, toluene, ether, and ammonia.

The danger is compounded when the materials are "cooked" over an open flame, creating both fire and explosion hazards.

"Meth labs use a wide range of chemicals that can expose not only the people producing the drug, but also others in the home—including children," notes Kevin Caravati, a GTRI senior research scientist. "A lot of these chemicals are toxic, and the hazardous waste they leave behind is often just poured onto the ground or dumped on unsuspecting businesses."

Beyond the chemical hazards, the meth labs are sometimes booby-trapped to injure law enforcement personnel. "The dangers that first-responders face from methamphetamine labs can be much greater than those at environmental hazard sites associated with traditional industrial sources, but the formal training programs are just not available at the right level yet," Caravati adds.

Once identified, cleaning up a meth lab can be done with established techniques using standard precautions—including protective clothing. "But the process of heating the chemicals tends to spread the contamination over a wide area beyond the immediate production facility," Doyle notes.

Contamination can leave a hidden hazard for unsuspecting residents of homes, apartments, or hotel rooms that have been inadequately cleaned. Meth is readily taken up by carpeting, draperies, and other furnishings, so new tenants can be exposed to residual amounts of the drug through skin contact.

"Unless the home is properly decontaminated, the next family moving in will be contaminated," Doyle says. "Children can wind up with measurable levels of methamphetamine just from crawling on the floor."

Proper decontamination can be expensive, up to \$10,000 for a large home. "One of the most difficult issues for the future will be determining who will pay for the cleanup," Caravati notes.

The new methamphetamine training adds to GTRI's nationally recognized programs in hazardous waste identification and remediation. And the new effort has already attracted participation from public safety officials in Georgia and Tennessee, as well as the U.S. Drug Enforcement Agency, which has been consulting with the GTRI scientists in development of the training program. ♦

(Kevin.caravati@gtri.gatech.edu)

Professional Development Planner

EDTV Offerings

- Tax-Exempt Revenue Bond Financing, **Atlanta**, Aug. 23, 2005
- Local Impact Analysis (LOCI), **Atlanta**, Oct. 4-5, 2005
- IEDC Real Estate Development and Reuse, **Atlanta**, Nov. 8-9, 2005

For more information on these and other EDTV courses, contact Martha Schoonmaker, CEcD, at 404.894.0332 or martha.schoonmaker@edi.gatech.edu

CGIS Offerings

- Asset Management and Data Integration Using GPS/GIS, **Atlanta**, Aug. 9, 2005
- Geodatabase for Pavement and Asset Management, **Atlanta**, Aug. 10-11, 2005
- Introduction of an IT-based Pavement and Asset Management, **Atlanta**, Aug. 8, 2005.
- Programming and Customizing ArcGIS, **Atlanta**, Aug. 15-16 and Oct. 24-25, 2005

For more information, contact www.pe.gatech.edu/conted/servlet/edu.gatech.conted.course.CourseList

CQGRD Offerings

Government & Growth

**Atlanta,
Oct. 5-6, 2005**

This two-day workshop designed for Georgia elected and appointed local officials and key staff familiarizes participants with methods they can use to ensure their communities improve quality of life and avoid undue local government expense as they grow. It covers such topics as land development and livability, transportation, legal framework, and revenue issues. For more information, visit

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