

February 2011

EXPORT CONTROLS

Improvements Needed to Prevent Unauthorized Technology Releases to Foreign Nationals in the United States



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Why GAO Did This Study

Countries posing national security concerns to the U.S. could upgrade their military forces with certain technologies having civilian and military (dual-use) applications. The Department of Commerce (Commerce) may require employers to obtain a “deemed export” license before they can transfer these technologies to foreign nationals in the U.S. The State Department also requires foreign nationals to obtain specialty occupation visas to work in the U.S. in occupations such as engineering, computers, and biotechnology. GAO was asked to examine the risk that foreign nationals in the U.S. may gain unauthorized access to controlled technologies, and the extent to which Commerce and other agencies implemented recommended changes to the deemed export licensing process and enforcement system. GAO analyzed licensing and visa data from Commerce and Homeland Security, respectively; reviewed reports; and met with law enforcement agencies, companies, and universities in Boston, Los Angeles, and San Francisco.

What GAO Recommends

Commerce should (1) assess issuance of specialty occupation visas covered by deemed export license applications and (2) report to Congress on how it will implement prior deemed export recommendations as part of the export control reform process. Commerce agreed with the first recommendation, but did not comment on reporting to Congress.

View [GAO-11-354](#) or key components. For more information, contact Joseph A. Christoff at (202) 512-8979 or christoffj@gao.gov.

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Improvements Needed to Prevent Unauthorized Technology Releases to Foreign Nationals in the United States

What GAO Found

Four factors together may indicate the risk that foreign nationals could gain unauthorized access to controlled dual-use technology. First, according to unclassified intelligence reports and law enforcement officials, foreign businessmen, scientists, engineers, and others have gained unauthorized access in the United States to controlled dual-use technologies. Second, during fiscal years 2004 through 2009, Commerce suspended the export privileges of three violators and fined 14 U.S. companies about \$2.3 million for allowing foreign nationals unauthorized access to controlled technologies. Third, Commerce’s screening of overseas visa applications for potential unlicensed deemed exports dropped from 54,000 in fiscal year 2001 to 150 in fiscal year 2009. Fourth, from fiscal years 2004 to 2009, the United States issued about 1.05 million specialty occupation visas in high-technology fields to foreign nationals from 13 countries of concern to work in the United States, while Commerce issued deemed export licenses authorizing transfers of technology to about 3,200 foreign nationals from these countries.

Commerce and Immigration and Customs Enforcement (ICE) have not implemented prior recommended changes to the deemed export licensing process involving outreach, and Commerce has taken action to clarify a regulatory definition, but confusion may remain. As a result, employers may not be aware of deemed export licensing requirements and obtaining the licenses required. GAO and other audit organizations made two key recommendations to correct weaknesses in the deemed export licensing process. The first recommended that Commerce develop an approach or plan to better inform employers about requirements to apply for deemed export licenses. However, Commerce still lacks an approach or plan to provide such information, particularly to small and mid-size companies. The second recommended that Commerce eliminate confusion by modifying the regulatory definition that is part of determining when foreign nationals can access controlled technologies in fundamental research without triggering the deemed export licensing requirement. In response, Commerce clarified the definition but may not have eliminated the confusion, as shown by uncertainty within Commerce over the definition, which resulted in a misunderstanding with a U.S. agency. Based on guidance from Commerce, the agency applied for 37 deemed export licenses, which Commerce processed over a 17-month period before advising the agency that it no longer needed to apply for such licenses.

Commerce has not implemented GAO’s and others’ recommendations to the export enforcement system involving monitoring license compliance and using immigration data for deemed export enforcement. Commerce has not created a program to monitor security conditions in licenses or used existing immigration data to enforce deemed export regulations. Commerce, ICE, and the Federal Bureau of Investigation have also not implemented recommendations to improve coordination on export control investigations, including those of foreign nationals subject to deemed export controls.

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Abbreviations

CCL	Commerce Control List
Commerce	Department of Commerce
DEAC	Deemed Export Advisory Committee
DHS	Department of Homeland Security
DOD	Department of Defense
DTSA	Defense Technology Security Administration
EAR	Export Administration Regulations
FBI	Federal Bureau of Investigation
ICE	U.S. Immigration and Customs Enforcement
IG	Inspector General
NEECN	National Export Enforcement Coordination Network
NIH	National Institutes of Health
ONCIX	Office of the National Counterintelligence Executive
USCIS	U.S. Citizenship and Immigration Service

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Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

February 2, 2011

The Honorable Fred Upton
Chairman
The Honorable Joe Barton
Chairman Emeritus
Committee on Energy and Commerce
House of Representatives

The Honorable Cliff Stearns
Chairman
Subcommittee on Oversight and Investigations
Committee on Energy and Commerce
House of Representatives

The Honorable Michael C. Burgess
House of Representatives

Countries posing national security concerns to the United States could upgrade their military forces with controlled dual-use U.S. technologies—technologies that have both civilian and military uses. To protect its national security and foreign policy interests, the United States controls the export of dual-use technologies having both civilian and military uses to certain countries of concern.¹ For this purpose, the Department of Commerce (Commerce) may require exporters of these goods to obtain an export license; similarly, Commerce regulations also deem certain transfers of controlled technology or source code to foreign nationals in the United States to be exports, requiring companies, universities, and agencies in some instances to obtain a “deemed export” license before

¹For the purposes of this report, we selected 13 countries of concern. We based this selection on several criteria, including (1) Commerce regulations that group countries by their level of restrictions and concern; (2) unclassified intelligence reports and discussions with U.S. law enforcement officials; (3) the ranking of countries by the number of deemed export enforcement cases from fiscal years 2002 through 2009; and (4) the publicly reported associations of some countries’ citizens with export enforcement cases over the past several years. Appendix I more fully explains how we selected these countries. The names of the countries of concern, while provided in a classified report, are omitted here.

they can transfer these technologies to foreign nationals.² According to the 2007 report of the Deemed Export Advisory Committee (DEAC), which was formed to review deemed export policy, deemed export controls can significantly strengthen national security by preventing foreign governments or terrorists from acquiring cutting-edge civilian technologies for military use. However, deemed export controls can have an adverse effect on U.S. industry and academia by imposing added costs not faced by overseas competitors.³ The executive branch is currently considering reforms to the U.S. export control regime in an Export Control Reform Initiative that would also affect deemed export licensing and enforcement. For instance, in August 2009 the President created an interagency task force to examine proposed export control reforms, and in November 2010, signed an executive order establishing an Export Enforcement Coordination Center to coordinate and strengthen the U.S. government's export enforcement efforts, including for deemed exports.⁴

In prior reports, we identified numerous weaknesses in the deemed export control system that could allow the unauthorized transfer of controlled technologies to foreign nationals in the United States. We also made several recommendations designed to prevent the unauthorized transfer of such technologies. For instance, in 2002, we reported that Commerce did not have a program to monitor compliance with the license security conditions imposed on almost all of the deemed export licenses approved.⁵ We recommended that Commerce work with the Departments of Defense (DOD), State, and Energy to develop a risk-based program to

²The Export Administration Regulations (EAR), 15 C.F.R. § 730-774, define technology as specific information necessary for the “development,” “production,” or “use” of a product. 15 C.F.R. § 772.1. The technologies controlled for export are generally contained in the Commerce Control List (CCL), Supplement 1 to Part 774, and fall into 10 categories including computers, chemical and biological substances, electronics, and materials processing. An example of a technology that is controlled and on the CCL involves certain fermenters used for growing bacteria and fungi in laboratories. These can be used in the development of vaccines and medical treatments but are controlled because they can also be used to create dangerous toxins for biological warfare.

³According to the DEAC, the United States is the only nation that implements a deemed export control system and participates in multilateral export control regimes. Other nations depend largely on their visa processes, intelligence information, and commercial intellectual property controls rather than a formal deemed export licensing system.

⁴Executive Order 13558, 75 Fed. Reg. 69,573 (Nov. 9, 2010).

⁵See for instance GAO, *Export Controls: Department of Commerce Controls over Transfers of Technology to Foreign Nationals Need Improvement*, [GAO-02-972](#) (Washington, D.C.: Sept. 6, 2002).

monitor compliance with deemed export licensing security conditions. We also found that Commerce did not screen thousands of immigration applications from foreign nationals in the United States who may seek work in U.S. high-technology industries. We recommended that Commerce use all existing U.S. immigration data to identify foreign nationals who could be subject to deemed export licensing requirements. Since our 2002 report, the Commerce and the Department of Homeland Security (DHS) Inspector Generals (IG), GAO, and other auditing organizations have issued several additional reports that discuss in full or in part the deemed export control system.⁶

In response to your request, we have updated our 2002 report on deemed exports, examining (1) the risk that foreign nationals in the United States may gain unauthorized access to controlled dual-use technologies, (2) the extent to which Commerce and other agencies have implemented recommended changes to the deemed export licensing process, and (3) the extent to which Commerce and other agencies have implemented recommended changes to the deemed export enforcement system.

To address these objectives, we examined applicable laws and directives and obtained fiscal year 2004-2009 data from Commerce's export licensing database system. We also obtained fiscal year 2004-2009 data from a DHS database that documents specialty occupation visa trends.⁷ We chose these time frames due to concerns about the reliability of data produced before fiscal year 2004. Based on GAO's and others' reports and interviews with agency officials, we determined that the data were sufficiently reliable for our use. For the purposes of this report, we selected four broad "specialty occupation" employee fields: engineering, computers, the physical sciences, and the life sciences, which generally correspond to employees working with technologies on the Commerce Control List (CCL). We chose these fields and not others such as the social sciences

⁶GAO, *Export Controls: Agencies Should Assess Vulnerabilities and Improve Guidance for Protecting Export-Controlled Information at Companies*, [GAO-07-69](#) (Washington, D.C.: Dec. 5, 2006); *Export Controls: Agencies Should Assess Vulnerabilities and Improve Guidance for Protecting Export-Controlled Information at Universities*, [GAO-07-70](#) (Washington, D.C.: Dec. 5, 2006); and *Export Controls: Challenges Exist in Enforcement of an Inherently Complex System*, [GAO-07-265](#) (Washington, D.C.: Dec. 20, 2006).

⁷A U.S. employer may temporarily hire a foreign national in a specialty occupation or as a fashion model of distinguished merit and ability by applying for an H-1B specialty occupation visa, which in general requires the theoretical and practical application of a body of specialized knowledge. This includes a bachelor's degree or the equivalent in fields such as the sciences, medicine and health care, education, or biotechnology.

because they include some of the most technologically advanced occupational fields such as aeronautical engineering. We also based our decision to include these fields on unclassified intelligence and law enforcement reports, as well as deemed export data. We quantified the number of foreign nationals approved for specialty occupation visas from 13 countries of concern using DHS immigration data. We reviewed Commerce, DHS, and interagency IG reports, and other reports. In Washington, D.C., we met with officials of the agencies responsible for reviewing license applications—the departments of Commerce, Defense, State, and Energy—as well as the agencies that outreach to companies, universities, and agencies and enforce deemed export licensing conditions and regulations—Commerce, DHS (the U.S. Immigration and Customs Enforcement (ICE)), and the Department of Justice (principally the Federal Bureau of Investigation (FBI)). We also met with officials of DHS’s U.S. Citizenship and Immigration Service (USCIS) to discuss a change to their Form I-129 that would require employers to acknowledge deemed export licensing requirements. In addition, we met with officials of law enforcement agencies in Washington, D.C.; Boston; Los Angeles; and San Francisco, as well as representatives of 33 associations, companies, universities, nonprofits, and agencies in these cities. We selected the nonprobability sample based in part on an analysis of Commerce’s fourth quarter fiscal year 2007 and fiscal year 2008 deemed export outreach plan.

We conducted this performance audit from July 2009 to February 2011 in accordance with generally accepted government auditing standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Appendix I provides a more detailed description of our objectives, scope, and methodology. This report is an unclassified version of a December 2010 classified report.

Results in Brief

Four factors—intelligence and law enforcement sources; fines and suspensions for deemed export violations; a reduced number of overseas visa applications that Commerce screens; and a large number of foreign nationals in the United States with specialty occupation visas in high-technology fields that may have required an export license—together may indicate the continuing risk that foreign nationals could gain unauthorized

access to controlled technology.⁸ First, foreign businessmen, scientists, engineers, and academics from countries of concern have gained unauthorized access to controlled dual-use technologies in the United States, according to intelligence and law enforcement sources. Second, from fiscal years 2004 to 2009, Commerce fined 14 U.S. companies about \$2.3 million for making unauthorized transfers of controlled technologies to foreign nationals from 25 countries. Commerce also suspended the export privileges of one company and two individuals for 20 years each. The majority of the enforcement actions involved foreign nationals from three countries. Third, Commerce officials stated that they screened 150 visa applications from U.S. posts overseas in fiscal year 2009 to identify potential unlicensed deemed exports—fewer than the 54,000 visa applications screened in fiscal year 2001—because of a change in procedures that is more reactive, focusing on leads and intelligence information, rather than proactive screening. Finally, we found that while USCIS approved a large number of foreign nationals for specialty occupation visas from 2004 to 2009, Commerce issued deemed export licenses authorizing the transfer of technology to a smaller number of foreign nationals during the same period. The U.S. government addressed shortages of U.S.-born engineers and scientists by approving specialty occupation visas in occupational fields including engineering, computers, electronics, and the biological sciences to approximately 1.05 million foreign nationals from 13 countries of concern. From fiscal years 2004 to 2009, Commerce issued deemed export licenses authorizing the release of technology to 3,178 foreign nationals from the same 13 countries. However, not all foreign nationals with H-1B specialty occupation visas are required to apply for deemed export licenses.

⁸To estimate the risk that foreign nationals working in high-technology fields could gain access to controlled technology, we selected four broad specialty occupations based on an examination of the categories of technology contained in the CCL and a review of unclassified reports detailing the types of dual-use technologies that countries are attempting to obtain. The four broad specialty occupation fields were computers, engineering, the physical sciences, and the biological sciences, including biotechnology. We excluded other H-1B occupational fields such as those in the social sciences. We then quantified the number of foreign nationals from 13 countries of concern working in these specialty occupation fields. We selected these 13 countries based on our analysis of the Export Administration Regulations, which groups countries by their level of restrictions, as well as intelligence reports, discussions with law enforcement officials, and the publicly reported associations of some countries' citizens with export enforcement cases over the past several years. Appendix I more fully details our methodology. We identified the names of these countries in our classified report.

Commerce and ICE have not implemented recommended changes to the deemed export licensing process involving outreach, and Commerce has taken action to clarify a regulatory definition, but confusion may remain. As a result, employers may be obtaining deemed export licenses for transfer of technology to fewer foreign nationals than should be the case. GAO and other audit organizations previously made two key recommendations to correct weaknesses in the deemed export licensing process.⁹ The first recommendation focused on providing better outreach, such as Commerce developing an approach or outreach plan to inform companies, universities, and agencies that employ foreign nationals of deemed export control requirements so they would apply for deemed export licenses when required. While Commerce has incorporated information on deemed export requirements in its training materials, it continues to lack an approach or outreach plan to provide information on deemed export licensing requirements, particularly to small- and mid-size companies, many of which employ foreign nationals but may not be familiar with the requirements. Such an outreach plan would have annual goals and identify priority industries, U.S. agencies, and academic institutions that are not currently applying for export licenses for the release of controlled technology to foreign nationals in the United States. According to Commerce and company representatives, such outreach would be particularly useful to the growing biotechnology sector. The second recommendation advised Commerce to modify the regulatory definition of “use” set forth in the Export Administration Regulations (EAR), which determines when technology to use controlled commodities can be released without triggering a deemed export licensing requirement. After reviewing the issue, including public comments on the recommendation, Commerce has not modified this definition, but has taken actions to clarify it. However, as shown by uncertainty within Commerce over the definition of “use” technology that resulted in a misunderstanding with the National Institutes of Health (NIH), Commerce’s clarification may not have eliminated the confusion. Based on guidance from Commerce on the definition, NIH applied for 37 deemed export licenses, which Commerce processed over a 17-month period before advising NIH that it no longer needed to apply for such licenses, though the definition itself remained the same.

Commerce has not implemented recommendations that we and others made involving monitoring compliance with deemed export licensing

⁹The other audit organizations were the Commerce IG and the DHS IG.

conditions and using immigration data to improve deemed export enforcement, while Commerce, ICE, and FBI have not implemented recommendations to improve coordination, as described below:

- Commerce continues to lack a compliance program to monitor security conditions on deemed export licenses, even though our 2002 and the Commerce IG's 2004 reports recommended that it establish one.¹⁰ A compliance program should involve on-site inspections of facilities to determine whether the license holder is complying with specific license conditions. In particular, all potential points of access to the controlled technology should be reviewed for appropriate safeguards, and a technology control plan to prevent foreign nationals from accessing controlled technologies should be implemented to ensure compliance with license conditions, according to the Commerce IG. The security conditions are imposed to help prevent foreign nationals from obtaining unlicensed access to controlled technologies and are attached to almost all of the deemed export licenses approved. In fiscal year 2006, Commerce established a program to monitor licensing conditions, but discontinued it after fiscal year 2007, citing competing priorities and budget constraints.
- Commerce does not use all existing DHS immigration data to detect firms that should have applied for deemed export licenses. In 2002, we recommended that Commerce use all existing immigration data, including data from change-of-status applications, to identify foreign nationals who could be subject to deemed export licensing regulations. In response to our recommendation, Commerce and DHS have begun discussing how to share these data, but have not finalized arrangements. DHS announced proposed changes to its primary immigration form in February 2010 that would make it easier for Commerce, ICE, and FBI to use immigration data for deemed export enforcement.
- Commerce, ICE, and FBI have not resolved weaknesses in the coordination of their overall export enforcement activities, notwithstanding our recommendations in 2006, which could impact

¹⁰GAO-02-972; U.S. Department of Commerce/Office of Inspector General, *Deemed Export Controls May Not Stop the Transfer of Sensitive Technology to Foreign Nationals in the U.S., Final Inspection Report No. IPE-16176* (Washington, D.C.: Mar. 31, 2004); Offices of the Inspectors General of the Departments of Commerce, Defense, Energy, Homeland Security and State, and the Central Intelligence Agency, *Interagency Review of Foreign National Access to Export-Controlled Technology in the United States*, Report No. D-2004-062 (Washington, D.C., Apr. 16, 2004).

deemed export enforcement.¹¹ For example, Commerce, ICE, and FBI have not created new written agreements or updated existing ones between and among these agencies to assign clear roles and responsibilities among the agencies as we recommended. According to Commerce, ICE, and FBI officials, the lack of such agreements has in some cases led to a duplication of efforts and ineffective sharing of investigative information, although they cited no specific cases involving deemed exports.

To better direct its efforts to detect possible unauthorized deemed exports and conduct outreach, we are recommending that the Secretary of Commerce, in consultation with the U.S. Attorney General and the Secretary of Homeland Security, assess the extent to which foreign nationals from countries of concern who were issued specialty occupation visas also should have been covered by deemed export licenses and use the results to identify vulnerabilities in the deemed export control system, target and inform employers about deemed export licensing requirements, and incorporate immigration data into its enforcement screening activities. In addition, to ensure that Commerce more fully addresses the deficiencies identified in this and prior reports, as part of the export control reform process, we are recommending that the Secretary of Commerce report to Congress on the steps being taken to implement past GAO and Commerce IG recommendations.

Commerce agreed with our first recommendation and stated that it would review prior GAO and IG recommendations as part of the ongoing Export Control Reform process. However, Commerce did not specifically agree or disagree with our recommendation to report to the Congress on the steps being taken to implement past GAO and Commerce IG recommendations. We believe this recommendation remains valid because resolving the deficiencies identified repeatedly since 2002 could be critical to the success of any export control initiative. Responding for the Attorney General, the FBI stated that it has conducted deemed export outreach to small-to-medium size biotechnology companies through several venues, including strategic task forces, counterintelligence working groups, conferences and other initiatives in coordination with the U.S. intelligence community and federal law enforcement agencies, including ICE and Commerce. FBI also stated that through participation at the National Export Enforcement Coordination Network (NEECN) and other arenas,

¹¹[GAO-07-265](#).

FBI, ICE, and Commerce have worked to resolve coordination of export enforcement activities. In our report we discuss the role of the NEECN, which ICE established to coordinate export control investigations, but note that ICE officials told us that the NEECN primarily focuses on investigations involving exports of goods, rather than deemed exports. Commerce's and FBI's written comments are contained in appendices V and VI. Commerce, FBI, and DHS also provided technical comments, which we have incorporated as appropriate.

Background

Under the Export Administration Act of 1979, as amended,¹² and the implementing EAR,¹³ companies, universities, and agencies may be required to obtain an export license before releasing controlled dual-use technology or source code subject to the EAR¹⁴ to a foreign national who is not a permanent resident of the United States or a member of certain groups of protected individuals such as asylum holders.¹⁵ Pursuant to the EAR, a transfer of technology within the United States to such a foreign national is deemed to be an export to his or her home country.¹⁶ To determine whether a license is required, the employer or university researcher needs to (1) determine whether technologies under consideration for release to certain foreign nationals are on the CCL, (2) determine whether a license is required to export the technology to the home country of the foreign national, and (3) determine whether any license exceptions apply.¹⁷ If it is determined that a licensing requirement applies, the employer must obtain a deemed export license before

¹²50 U.S.C. App. §§ 2401-2420. The Export Administration Act of 1979, as amended (EAA) is not permanent legislation. Since August 21, 2001, the EAA has been in lapse. However, the President has continued the regulations in effect through Executive Order 13222 of August 17, 2001 (3 C.F.R., 2001 Comp 783 (2002)), which most recently was extended by Presidential Notice on August 12, 2010, under the authority provided by the International Emergency Economic Powers Act (50 U.S.C. §§1701 et seq.). See 75 Fed. Reg. 50,681 (Aug. 12, 2010).

¹³15 C.F.R. parts 730-780.

¹⁴For purposes of deemed export rules, technology and source code that are on the CCL are of particular significance. According to Commerce, with a few exceptions, only controlled technology and source code listed on the CCL are subject to deemed export licensing requirements.

¹⁵15 C.F.R. § 734.2(b)(2)(ii).

¹⁶15 C.F.R. § 734.2(b)(2)(ii).

¹⁷15 C.F.R. § 738.4.

releasing controlled technologies to foreign nationals.¹⁸ “Release” may include opportunities to review written materials or discussions about controlled technologies. Violators may face administrative or criminal penalties, including fines, denial of export privileges, and imprisonment.¹⁹ The EAR generally does not cover information that arises during, or results from, fundamental research.²⁰ As a result, information that falls within the scope of the EAR’s “fundamental research” provision does not require a license for release to a foreign national. However, authorization may be required if technology that is controlled (typically, on the CCL) is transferred to a foreign national during the course of undertaking fundamental research.²¹

Commerce reviews and issues export and deemed export licenses, in consultation with other agencies, and enforces the EAR. Within Commerce’s Bureau of Industry and Security, Export Administration reviews license applications, issues licenses, and provides information or outreach to companies, universities, and agencies that employ foreign nationals about deemed export licensing requirements principally through its own seminars and conferences, as well as seminars and conferences sponsored by other organizations.²² Commerce intends for such information to inform and help exporters comply with export control requirements. Commerce’s Office of Export Enforcement also provides outreach about deemed export licensing rules and regulations as part of its investigative efforts, often in meetings with representatives of companies, universities, agencies, and relevant associations.

To work in the United States, foreign nationals and their employers must also comply with U.S. visa regulations for nonimmigrants wanting to work and study in the United States. Many foreign nationals who are not permanent residents in the United States that seek work here apply for H-

¹⁸15 C.F.R. § 736.2.

¹⁹15 C.F.R. § 764.3.

²⁰The EAR describes this information as technology and software. In addition, certain software is subject to the EAR. 15 C.F.R. § 734.3(b)(3).

²¹Revisions and Clarification of Deemed Export Related Regulatory Requirements, 71 Fed. Reg. 30,840 (May 31, 2006).

²²In addition, Commerce’s Export Administration conducts outreach through phone conversations, e-mails, Internet-based training modules, and Webinars. A Webinar is a workshop or conference delivered over the Internet.

1B specialty occupation visas. An H-1B visa allows a U.S. employer to temporarily fill specialty occupations (such as those requiring electrical or software engineers) with foreign workers. A foreign national overseas may obtain an H-1B visa from State, if USCIS determines that an employer may employ the foreign national as a temporary worker. USCIS is the agency within DHS that oversees lawful immigration to the United States. A foreign national already in the United States may also have his or her immigration status changed to H-1B by USCIS. For example, an employer seeking to hire a foreign student who has graduated from a U.S. college or university could petition USCIS to change the foreign national's immigration status from student to H-1B.

Executive Order 12981,²³ as amended, governs the interagency licensing review process for all dual-use exports. Pursuant to this order, other agencies provide recommendations to Commerce in the review of all export license applications, including deemed export license applications, as follows:

- State's Bureau of International Security and Nonproliferation reviews the deemed export license applications that Commerce refers to it for proliferation concerns and makes recommendations on whether these licenses should be approved, approved with conditions, or denied. In addition, State's Bureau of Consular Affairs shares with Commerce and DOD certain information obtained from some foreign nationals during the visa application process.²⁴
- DOD, principally the Defense Technology Security Administration (DTSA), reviews and evaluates deemed export licenses for technical, policy, and intelligence concerns, referring some licenses to the Army, Navy, and Air Force for additional study. In addition, DTSA refers some deemed export licenses to the Defense Intelligence Agency for information on foreign nationals from certain countries.
- The Department of Energy reviews deemed export license applications that Commerce refers to it involving nuclear uses and nuclear end users, as well as other technologies, and makes recommendations on whether these license applications should be approved, approved with conditions,

²³60 Fed. Reg. 62,981 (Dec. 5, 1995).

²⁴Separately, State also licenses the export of weapons and military technology.

or denied. Energy principally relies on its network of 20 national laboratories to conduct its review.

- FBI conducts checks of its records on behalf of Commerce when requested.

In addition, two agencies assist with deemed export enforcement, which includes providing investigations-related outreach:

- ICE enforces deemed export licensing regulations by conducting criminal investigations, indicting and prosecuting potential violators, and referring noncriminal violators to Commerce. In addition, since fiscal year 2001, ICE has provided outreach to companies, universities, and agencies that hire foreign nationals as part of a program known as Project Shield America.²⁵ The focus of this program is to prevent the (1) proliferation of controlled technology and components; (2) unlawful acquisition of nuclear, chemical, and biological weapons; and (3) unlawful exportation of weapon systems and classified or controlled technical data. ICE's outreach efforts involve face-to-face discussions with representatives of companies, universities, and agencies, as well as discussions at seminars and conferences.
- FBI enforces deemed export license regulations by conducting criminal investigations, indicting and prosecuting potential violators, and referring noncriminal violators to Commerce. FBI takes the lead in investigations involving counterintelligence and counterterrorism. In addition, FBI provides outreach through its Counterintelligence Strategic Partnership Program. The program entails the use of focus groups and meetings with leading universities and companies to raise awareness of threats and vulnerabilities involving controlled technologies to industry and academia. FBI's outreach efforts, like ICE's, involve face-to-face meetings as well as discussions at seminars and conferences.

The review process for a deemed export license parallels the review process for an application for a license to export commodities or

²⁵Project Shield America assists in the prevention of export violations. Under the program, special agents cultivate relationships with and obtain the cooperation of U.S. companies, universities, and research facilities involved in the manufacture, sale, or export of U.S. strategic technology and munitions that could harm the country if illegally exported to countries or entities of concern. ICE began Project Shield America in fiscal year 2001, but according to ICE officials, an outreach program also existed before fiscal year 2001.

technologies overseas.²⁶ Under the EAR's deemed export provisions, an employer or university researcher is required to seek a deemed export license if the export of the technology to the foreign national's country of citizenship would require a license. If a license is required, the exporter (e.g., company, university, or agency) must submit a license application to Commerce identifying the technology, end use, and Export Control Classification Number; the proposed destination; and the intended end user.²⁷ In the case of deemed export license applications, employers or university researchers must also provide the foreign national's resume, visa type, and a list of his or her publications. An application for a deemed export license may list more than one individual, and an organization may also apply for more than one deemed export license for an individual, depending on the technologies that the employer or researcher wants to provide to the foreign national.

Foreign Nationals from Countries of Concern Have Gained Unauthorized Access to Controlled Technologies in the United States

Four factors—intelligence and law enforcement findings; fines and suspensions for deemed export violations; a reduced number of overseas visa applications that Commerce screens; and a large number of foreign nationals with specialty occupation visas in high-technology fields— together may indicate the continuing risk that foreign nationals could gain unauthorized access to controlled technology. First, countries of concern use their foreign nationals in the United States to acquire controlled dual-use technologies for military purposes, according to intelligence and law enforcement sources. Second, during fiscal years 2004 through 2009, Commerce fined 14 U.S. companies about \$2.3 million for the unauthorized transfer of controlled technologies to foreign nationals from 25 countries, and applied criminal penalties to one company and two individuals. It also suspended the export privileges of some exporters. Third, Commerce officials stated that they screened 150 visa applications from U.S. posts overseas in fiscal year 2009 to identify potential unlicensed deemed exports—fewer than the 54,000 visa applications screened in

²⁶The time it takes to process an export control license can vary. Under Executive Order 12981, license application determinations are supposed to be resolved or referred to the President within 90 days of the Bureau of Industry and Security having registered the completed license application. However, Executive Order 12981 also provides that agencies can “stop the clock” for various reasons, including to request additional information. 60 Fed. Reg. 62,981 (Dec. 5, 1995).

²⁷See 15 C.F.R. part 748. The Export Control Classification Number (ECCN) is an alphanumeric code, e.g., 3A001, that describes a particular item or type of item, and shows the controls placed on it. All ECCNs are on the CCL.

fiscal year 2001—because of a change in procedures. Finally, we found that while USCIS approved specialty occupation visas for a large number of foreign nationals from 2004 to 2009, Commerce approved deemed export licenses to cover a smaller number of foreign nationals during the same time period.

According to Reports and Officials, Countries of Concern Use Some of Their Citizens in the United States to Collect Controlled Dual-Use Technologies

According to intelligence reports and law enforcement sources, as well as congressional testimony and law enforcement officials, a small group of countries is responsible for most of the efforts to acquire controlled technologies for military purposes. The countries included in this small group are detailed in the December 2010 classified version of this report. According to congressional testimony presented in September 2005 by the Director of the Office of the National Counterintelligence Executive (ONCIX),²⁸ and intelligence assessments, some countries use some of their foreign nationals as part of organized programs to obtain controlled technologies while working, studying in, or visiting the United States.²⁹ In addition, the Director of ONCIX also testified that the U.S. government has limited insight into foreign intelligence operations in the United States. The Director of ONCIX also said that much of the intelligence collection against the U.S. technology base is carried out by those who are employing nontraditional collection means against the United States, rather than by known intelligence officers. As a result, the U.S. government has little knowledge of when individuals who ostensibly come to the United States for legitimate business purposes might have illegitimate objectives, according to this official.³⁰

According to the ONCIX and other assessments, the technologies most often targeted for theft since 2002 have included aeronautics, computers and information systems, electronics, lasers and optics, sensors and

²⁸The ONCIX is part of the Office of the Director of National Intelligence and is staffed by senior counterintelligence and other specialists from across the national intelligence and security communities. Among other things, the ONCIX develops, coordinates, and produces annual foreign intelligence threat assessments.

²⁹*Sources and Methods of Foreign Nationals Engaged in Economic and Military Espionage: Hearing before the Subcommittee on Immigration, Border Security and Claims, of the Committee on the Judiciary, House of Representatives, 109th Cong. (2005).*

³⁰Commerce officials noted that emerging technologies are examined as part of an interagency process that involves preparing proposals to the four multilateral export control regimes and subsequently revising the CCL to add and delete technologies as appropriate, based on national security and other concerns.

marine technology, and unmanned aerial vehicles. In addition, according to ONCIX's 2003 Annual Report, biotechnology has been of particular interest.³¹ Moreover, the ONCIX has expressed concern about emerging military technologies or commercial breakthrough technologies that have not yet been added to the CCL because these technologies are often hard to identify in their early phases and are more vulnerable to loss or compromise.

Although the types of technologies involving deemed export licenses have changed little over the past 5 years, some industry sectors have grown and hired increasing numbers of foreign nationals. For example, the biotechnology industry—one area that the ONCIX identified as most often targeted by theft—has enjoyed rapid growth in both revenues and employment over the past few years. Although the economic downturn from 2008 to the present has generally resulted in lower levels of hiring and investment by U.S. industry, the biotechnology sector had previously grown at a rapid pace. According to a private sector study, the biotechnology industry's sales and revenues increased at least 80 percent from 2002 to 2006.³² The number of employees involved in biotechnology research and development in the United States also doubled, from approximately 75,000 in 2003 to approximately 150,000 in 2006, according to the Organization of Economic Co-Operation and Development.³³ The Department of Labor's 2010-2011 edition of the *Occupational Outlook Handbook* forecast that the sector will continue to experience above-average employment growth rates of about 21 percent over the 2008-2018 period.³⁴

Countries targeting U.S. dual-use technologies have the opportunity to send their foreign nationals to work in the United States because the United States has shortages of qualified workers. Sixty-five percent of U.S. manufacturers report experiencing shortages of qualified employees, particularly of engineers and scientists, according to the 2007 report of the

³¹*Annual Report to Congress on Foreign Economic Collection and Industrial Espionage—2003*, Office of the National Counterintelligence Executive, February 2004.

³²*Guide to Biotechnology 2008*; Biotechnology Industry Association, Washington, D.C.

³³van Beuzekom, Brigitte and Arundel, Anthony; *OECD Biotechnology Statistics 2006 & OECD Biotechnology Statistics 2009*, Organization for Economic Co-operation and Development, Paris.

³⁴*Occupational Outlook Handbook*, U.S. Bureau of Labor Statistics, Washington, D.C. (January 2010).

DEAC. About 18 percent of U.S. manufacturers report serious shortages and 47 percent report moderate shortages.³⁵ As the DEAC reported in 2007, many of these positions could be filled by foreign nationals with H-1B specialty occupation visas.

Penalties on Companies Show That Some Foreign Nationals from Countries of Concern Gained Unauthorized Access to Controlled Technologies

Information obtained from analysis of Commerce investigations closed during fiscal years 2004 through 2009 provides evidence that some foreign nationals have gained unauthorized access to controlled dual-use technologies. These foreign nationals were predominantly from three countries of concern. Of the 16 dual-use deemed export enforcement investigations resulting in penalties, such as fines or suspension of trading privileges, 9 involved nationals of one country, as did all 3 investigations that concerned criminal violations of law involving the unauthorized release of technology. For example, Commerce levied fines of \$517,000 and suspended the export privileges of one company and two individuals for 20 years each in criminal cases for releasing CCL technology to nationals of one country without a license. Commerce also levied the largest fine for a deemed export case—\$560,000—against another company for releasing technical data to a national from the same country without authorization.

Commerce No Longer Screens Many Overseas Visa Applications

We reported in 2002 that Commerce screened visa applications submitted overseas; however, Commerce officials stated that they now screen few overseas visa applications.³⁶ In fiscal year 2001, Commerce screened about 54,000 visa applications submitted to overseas posts, referring about 160 potential cases to Commerce's field offices for further limited follow up and review. Pursuant to Commerce guidance in 2001, agency analysts screened State visas by using Commerce's enforcement database, DOD comments on rejected license applications, and other sources of information to detect linkages between foreign entities of concern and visa applicants. By contrast, in fiscal year 2009, Commerce screened only 150 visa applications submitted overseas, referring just 1 to a Commerce field office for further review. Commerce officials stated that the agency

³⁵ More recent data suggest that employers continue to rely heavily on foreign nationals to fill specialty positions, including high-technology positions. For instance, according to USCIS, in fiscal year 2009, approximately 214,000 H-1B visas were approved for foreign nationals offered employment by U.S. companies, universities, and agencies.

³⁶ [GAO-02-972](#).

reviewed thousands fewer overseas visa applications in fiscal year 2009 as compared to fiscal year 2001 because of a change in its procedures. The new procedures are more reactive because they focus on leads and intelligence information rather than proactive screening. According to these officials, the resulting change in procedures has led to better investigations; however, Commerce officials did not provide documentation to show how investigations were better. In technical comments provided on a draft of this report in November 2010, Commerce stated that a methodology that does not involve the review of every visa application does in fact constitute a proactive and effective approach. Commerce also stated that it would not be sound practice, with limited resources, to perform data reviews en masse of State's large database of visa cases, which could result in an overwhelming amount of data and unfocused research. However, we affirm our characterization that the new procedures are more reactive, as they rely on Commerce receiving leads or information, rather than proactively and routinely reviewing a portion of the database.

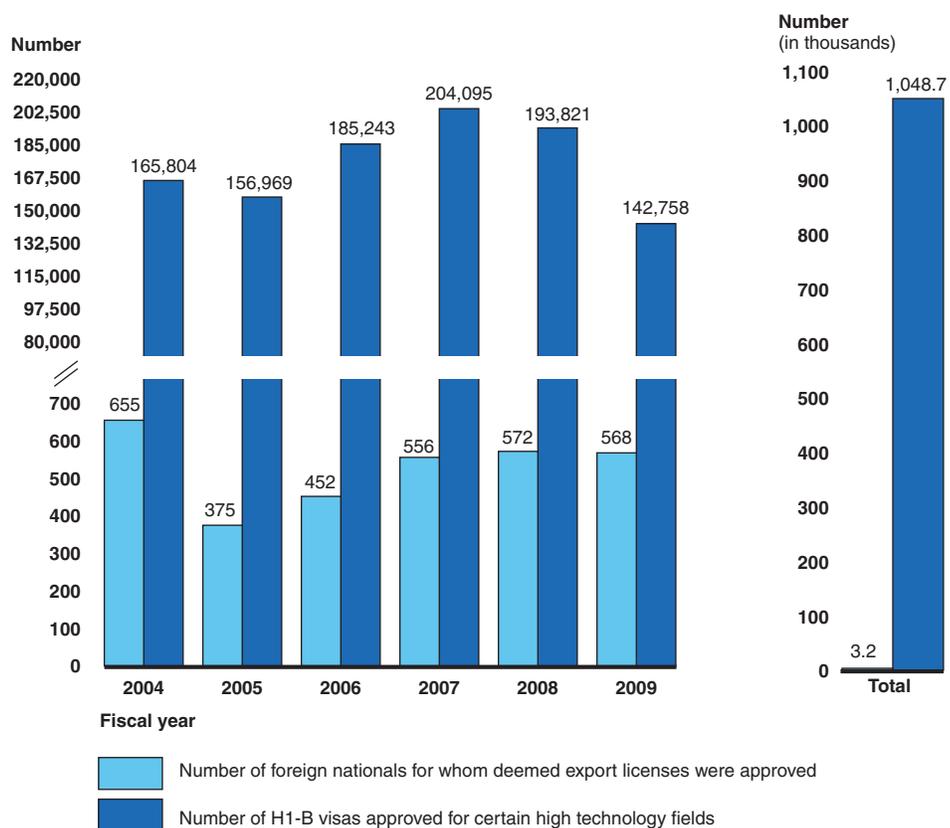
Immigration and Licensing Data Suggest a Pool of Risk That Commerce Has Not Assessed

Based on analysis of DHS and Commerce data from fiscal years 2004 through 2009, we found that USCIS approved approximately 1.05 million foreign nationals from 13 countries of concern for specialty occupation visas, and Commerce approved deemed export licenses authorizing release of technology to approximately 3,200 foreign nationals from the same countries of concern (see fig. 1).³⁷ This, combined with the other factors already described—intelligence and law enforcement sources; fines and suspensions for deemed export violations; and the reduced number of overseas visa applications that Commerce screens—could indicate a continuing risk of foreign nationals gaining unauthorized access to controlled technology. In particular, our analysis of DHS and Commerce data focused on companies, universities, and agencies hiring foreign nationals to work in such areas as computer technology and the biological sciences. Figure 1 compares the number of foreign nationals from 13 countries of concern who worked in certain high-technology specialty occupations to the number of foreign nationals from the same countries who were covered by deemed export licenses for each fiscal year from 2004 through 2009. It also shows the total numbers of specialty occupation

³⁷The DHS data were obtained from USCIS. We limited ourselves to analyzing H-1B specialty occupation visa data because ICE, which obtains student and visitor data, did not provide these data in time for this report.

visas and deemed export licenses authorizing release of technology to foreign nationals from the same countries of concern over the period of fiscal years 2004 through 2009. The figure also shows that while the number of deemed export licenses approved to cover foreign nationals from these countries of concern peaked in fiscal year 2004 at 655 and was lower in subsequent years, the number of foreign nationals approved to receive H-1B specialty occupation visas increased until fiscal year 2007 to 204,095, then declined in fiscal year 2009 to 142,758.

Figure 1: Comparison of the Number of Foreign Nationals from Countries of Concern Approved to Receive Specialty Occupation Visas to Those Covered by Deemed Export Licenses, Fiscal Years 2004-2009



Sources: GAO analysis of Commerce and State data.

To address the serious shortage of qualified engineers and scientists, during fiscal years 2004 to 2009, the United States approved approximately 1.7 million foreign nationals to work in the United States in certain high-technology occupational fields such as engineering, computers, the

biological sciences, and the physical sciences. This number includes about 1.05 million specialty occupation visas that the United States approved for foreign nationals from 13 countries of concern.

By comparing the overall number of foreign nationals from countries of concern receiving specialty occupation visas to work in high-technology occupations with the number of deemed export licenses issued, we found that Commerce issued deemed export licenses covering a relatively smaller number of foreign nationals from countries of concern. However, there is no requirement that a foreign national who holds a specialty occupation visa also be covered by a deemed export license. Furthermore, transfer of technology to multiple foreign nationals can be covered by a single deemed export license.³⁸ From fiscal years 2004 through 2009, Commerce approved deemed export licenses authorizing transfers of technology or source code to 3,178 foreign nationals of certain countries of concern.³⁹ Our comparison of USCIS and Commerce data showed specialty occupation visas for approximately 818,000 foreign nationals from one country or about 78 percent of the approximately 1.05 million total H-1Bs approved during this time period, compared to deemed export licenses authorizing release of technology or source code to 444 foreign nationals from the same country. We found specialty occupation visas for approximately 149,000 foreign nationals from a second country compared to deemed export licenses authorizing transfer of technology or source code to 2,184 foreign nationals from the same country. Appendix II shows the number of foreign nationals approved by USCIS to receive certain high-technology H-1B specialty occupation visas from the 13 countries of concern that we selected as part of this review and the number of foreign nationals from the same countries that Commerce approved for deemed export licenses.

³⁸A single deemed export license issued to a company may authorize the release of controlled technology to 10 or more foreign nationals to access controlled technology. However, Commerce data show that in some years the number of licenses approved was greater than the number of foreign nationals involved in the release of technology. Commerce officials explained that in some cases companies apply for more than one license for each foreign national because licenses tend to be narrowly focused with respect to the type of technology approved for release and the companies might need the foreign national to access more than one type of technology.

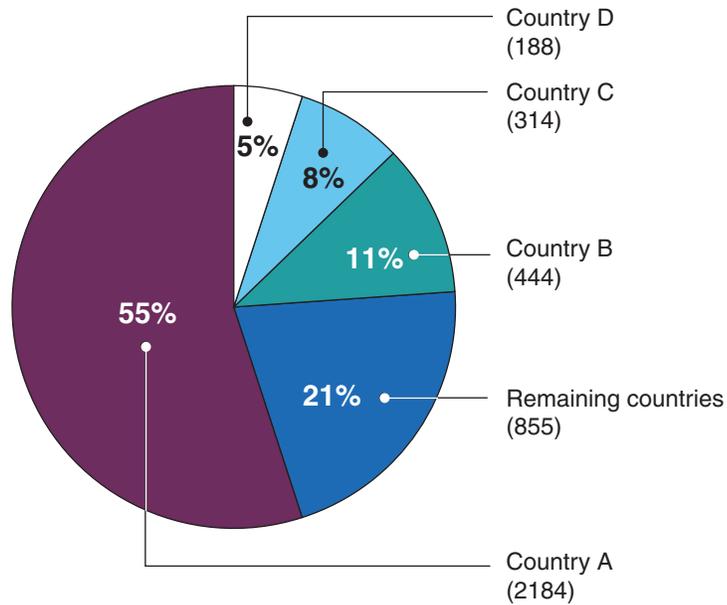
³⁹Commerce approved 4,101 deemed export licenses in this period authorizing release of technology or source code to a total of 3,985 foreign nationals.

In technical comments on this report, Commerce stated that the report should put deemed exports in the context of the proportion of all exports to exports licensed by Commerce. Commerce concluded that the proportion of transactions requiring a Commerce license for deemed exports is about the right order of magnitude. It stated that the proportion of transactions requiring a Commerce license for actual exports—0.3 percent—is roughly the same as the proportion of high-technology visas identified by GAO to deemed export licenses—1.05 million specialty occupation visas in high-technology fields and 3,200 deemed export licenses to foreign nationals (0.3 percent). However, Commerce provided no rationale for why the ratio of the number of all Commerce licenses to the number of all deemed export licenses should be comparable—or even relevant—to the proportion of specialty occupation visas compared to deemed export licenses. Commerce also stated other reasons that may explain the proportionately small number of deemed export licenses: (1) under the EAR, a technology license exception is available for release of controlled technology to nationals from three countries of concern, but is not reflected in licensing data; (2) the economic downturn from 2008 to the present has resulted in lower levels of hiring and investment by U.S. industry; (3) there has been a significant development of high-technology research and development offshore; and (4) the emergence of leading foreign research and technical schools has supplied more indigenous engineering and technology skills to foreign companies.

In addition, the officials said that employers have an incentive to police themselves and reduce the number of opportunities for foreign nationals to obtain sensitive technologies for use in their home country since a loss of such proprietary information could pose a financial risk to employers. However, Commerce Office of Enforcement officials told us that many small-to-medium-size employers do not have mechanisms for protecting sensitive technologies.

Our analysis of Commerce data shows that for fiscal years 2004 to 2009, foreign nationals from four countries of concern accounted for 79 percent of all the foreign nationals covered by deemed export licenses for this period. One country alone accounted for approximately 55 percent of the total. Figure 2 shows the percentage of foreign nationals from the four countries that received the most deemed export licenses during fiscal years 2004 through 2009 as well as the percentage of foreign nationals covered by deemed export licenses for fiscal years 2004 through 2009 from all other countries.

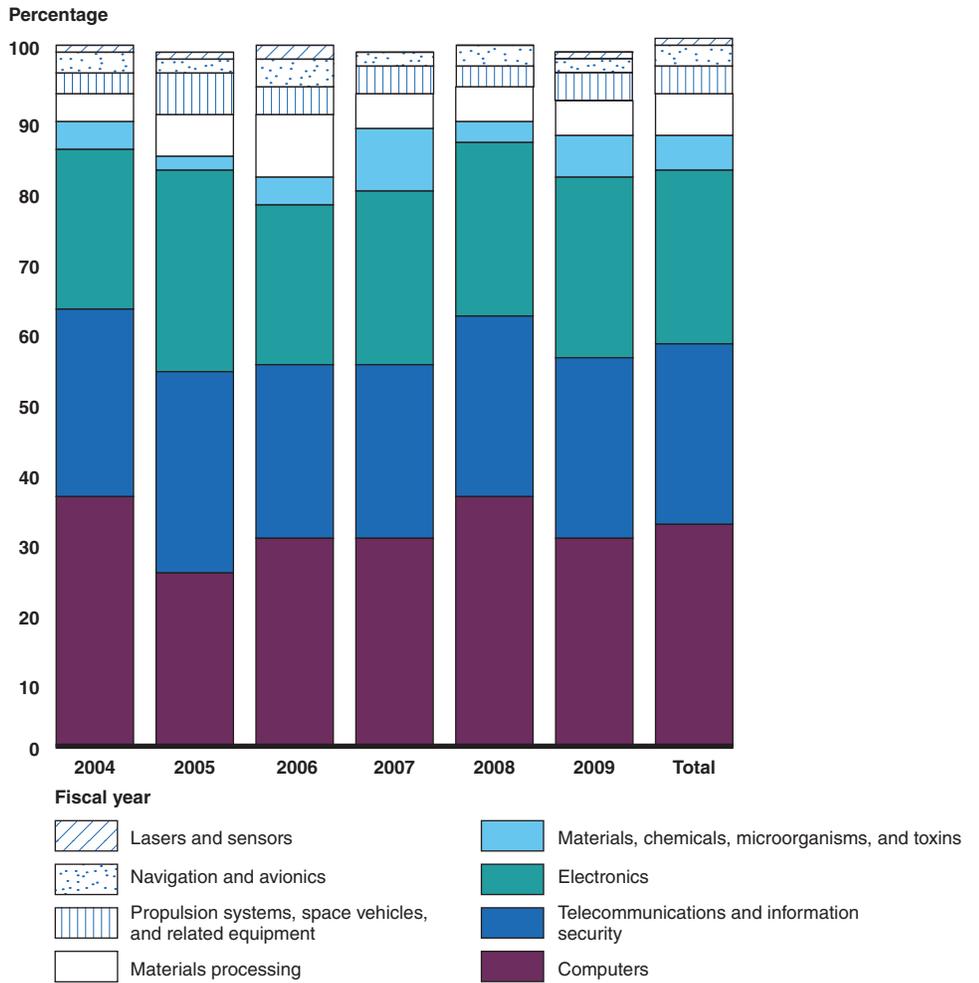
Figure 2: Percentage of Foreign Nationals Covered by Deemed Export Licenses from the Four Principal Countries of Concern, as well as Other Countries, Fiscal Years 2004-2009



Source: GAO analysis of Commerce deemed export licensing data.

Our analysis of Commerce’s deemed export licensing data for fiscal years 2004 through 2009 showed a concentration of licenses in some of these technologies, particularly computers and electronics, but little change in the distribution of technologies licensed for release (see fig. 3). While our analysis identified some differences in the percentages of deemed export licenses approved for the individual categories of electronics and computers, the technologies of computers, telecommunications and information security, and electronics together comprised at least 80 percent of the deemed export licenses issued in each fiscal year.

Figure 3: Composition of Technologies Listed in Deemed Export Licenses Approved in Fiscal Years 2004 through 2009



Source: GAO analysis of Commerce data.

Note: Two CCL categories—marine; and nuclear materials, facilities, and equipment—are not listed because only one foreign national was approved for a deemed export license in these two technology categories.

Commerce and ICE Have Not Implemented Recommended Changes to the Deemed Export Licensing Process Involving Outreach, and Commerce Has Taken Actions to Clarify a Regulatory Definition but Confusion May Remain

Commerce and ICE have not implemented recommended changes to the deemed export licensing process involving outreach. As a result, employers may be obtaining deemed export licenses for release of technology to fewer foreign nationals than should be the case. GAO and other audit organizations previously made two key recommendations to correct weaknesses in the deemed export licensing process. The first recommendation focused on providing better outreach to inform companies, universities, and agencies that employ foreign nationals of deemed export control requirements so they would apply for deemed export licenses when required. The second recommendation advised Commerce to modify the regulatory definition of “use” set forth in the EAR. Commerce has taken actions to clarify this definition, but confusion about its application may remain.

Commerce and ICE Have Not Implemented Prior Recommendations to Improve Outreach to Companies, Universities, and Agencies

Commerce and ICE have not implemented prior recommendations to improve outreach to companies, universities, and U.S. agencies to address weaknesses identified by GAO and the Commerce and DHS IGs. As a result, employers may be obtaining deemed export licenses for transfer of technology or source code to fewer foreign nationals than should be the case. The Commerce IG noted in 2004 that overall export licensing data and interviews with company officials suggested that Commerce was doing little to raise awareness of deemed export licensing requirements among companies and industry sectors that have not traditionally applied for deemed export licenses. Specifically, the Commerce IG reported that Commerce’s outreach program for deemed export controls did not include entities other than those applying for export licenses for the release of export-controlled technology to foreign nationals in the United States. Overall, the lack of awareness and understanding of laws and regulations pertaining to the release of export-controlled technology to foreign nationals in the United States could harm national security if militarily sensitive technology is released to unauthorized foreign nationals, according to the Commerce IG. Similarly, in 2006, we reported that

Commerce needed to improve its efforts to provide information and outreach to companies and universities.⁴⁰

In response to GAO's and the Commerce IG's recommendations that Commerce improve outreach to companies and universities, Commerce conducted deemed export outreach and prepared and adopted outreach plans; however, it did not implement all of these plans. Specifically, the Commerce IG recommended that Commerce develop written outreach plans. We also recommended that, among other things, Commerce use immigration, student, and other data to more precisely target outreach activities to companies and universities based on an assessment of the vulnerabilities of their use of controlled information, improve interagency coordination, and conduct additional outreach. Commerce IG recommended that Commerce's strategic outreach plan for exports of controlled technology to foreign nationals in the United States have annual goals and identify priority industries, federal agencies, and academic institutions that are not currently applying for export licenses for the release of export-controlled technology to foreign nationals in the United States. Commerce stated that it would continue to identify priority industries and conduct outreach to small- and medium-sized businesses and defense contractors to educate those types of companies about dual-use export control rules involving deemed exports. In addition, Commerce stated that it had already targeted outreach in the area of biotechnology by discussing export policies and procedures with the biotechnology industry and academia, as well as visits to U.S. government research labs, universities, small business associations, and foreign student associations. Among other things, to better identify emerging priority technologies for inclusion on the CCL, Commerce established an Office of Technology Evaluation in fiscal year 2006.

However, our analysis of Commerce's Export Administration's outreach plans for fiscal years 2004 and 2005 found they did not include a strategy to improve outreach, but instead listed organizations that Export Administration decided to meet with during the year.⁴¹ While Commerce did prepare and adopt a strategy for outreach as part of an enhanced deemed export initiative for the fourth quarter of fiscal year 2007 and fiscal year 2008, according to agency officials, it never implemented the

⁴⁰GAO-07-69; GAO-07-70.

⁴¹We requested a copy of Commerce's fiscal year 2006 outreach plan on at least two occasions, but Commerce did not provide a copy.

outreach plan due to funding constraints and eventually provided outreach to only about 11 percent of the approximately 300 companies and universities it had originally targeted. The strategy explicitly recognized that Commerce needed to better inform companies in sectors of the economy that have not traditionally applied for deemed export licenses, specifically, biotechnology, and to use specialty occupation H-1B data and student data to better target outreach.⁴² In addition, the deemed export initiative included an additional \$2.6 million in fiscal year 2006 to hire eight additional staff to focus on such things as enhanced deemed export outreach. However, Commerce officials stated that a budget cut of approximately 3 percent that occurred during fiscal year 2007 and the departure of the three staff hired under the deemed export initiative adversely affected the fourth quarter fiscal year 2007 and fiscal year 2008 outreach plan. As of August 2010, Commerce had not replaced the staff and currently has not assigned any staff to focus exclusively on deemed export outreach. According to Commerce Export Administration officials, they currently do not have a national outreach plan focused on deemed exports. However, Commerce does conduct outreach specific to deemed exports and includes the topic of deemed exports in overall export control seminars. According to Commerce, it began conducting seminars focused exclusively on deemed exports in January 2006.⁴³

Similarly, Commerce's Office of Export Enforcement also conducts outreach to inform companies, universities, and agencies about deemed export licensing requirements, but lacks a national outreach plan, according to Office of Export Enforcement officials. Commerce Office of Export Enforcement officials told us that each of Commerce's nine export enforcement field offices could develop outreach plans for their areas of jurisdiction. However, we found that none of the three Commerce field offices in the cities that we visited—Boston, Los Angeles, and San Francisco—had developed such plans.

ICE has taken actions in response to the DHS IG's 2004 recommendations that it improve its deemed export outreach, but continues to lack written

⁴²In comments provided to us in November 2010, Commerce stated that its understanding of the types of companies that attend its export control seminars is limited because it does not collect the data needed to distinguish between small, medium-sized, and large companies. It further noted that it has published a Notice of Inquiry in the *Federal Register* requesting input on the impact of export controls on small and medium-sized enterprises.

⁴³Commerce also began offering Webinars focusing on deemed exports as early as August 2007.

guidance for its agents on what information outreach activities should present. The DHS IG found that ICE had not incorporated into its outreach written guidance or a checklist for Project Shield America that agents could refer to when selecting export control topics to present during their outreach visits. The DHS IG noted that without adequate guidance about export laws and regulations, particularly those specific to deemed exports, agents might fail to present this critical information. It recommended that ICE implement standard operating procedures and a standardized checklist of items as part of its Project Shield America outreach to companies, universities, and agencies to ensure that the release of controlled technology to foreign nationals is included in ICE presentations. ICE concurred with this recommendation. ICE has developed a component for deemed export outreach and investigations known as Operation Tech Defense as part of Project Shield America. However, since fiscal year 2004, ICE has reduced the number of outreach activities by approximately 35 percent (from 2,322 outreach meetings in fiscal year 2004 to 1,504 in fiscal year 2009) and, like Commerce, lacks a national outreach plan.⁴⁴

FBI officials stated that its field offices also develop local outreach plans and that FBI considers outreach on deemed exports to be an integral part of its outreach; however, agency officials noted that it does not have any outreach focused exclusively on deemed exports. Although both ICE and FBI officials in Washington told us that outreach plans are developed locally, we found that none of the ICE and FBI field offices in the cities that we visited had developed such plans. ICE and FBI officials in Boston, Los Angeles, and San Francisco said that resource constraints made it difficult to prepare such plans.

We found that the Commerce IG's critique of Commerce's outreach activities in 2004—a lack of focus on companies other than those that were applying for licenses and a general lack of awareness of deemed export laws and regulations among other companies—pertained to Commerce, ICE, and FBI in the cities we visited. According to Commerce, ICE, and FBI officials in the three cities where we conducted field work, the three agencies tended to focus their deemed export outreach on the same types of companies and universities—principally larger companies,

⁴⁴ICE statistics show that the number of outreaches dropped significantly from about 2,300 in fiscal year 2004 to about 1,600 in fiscal year 2005 and have averaged about 1,450 outreaches per year.

universities, and agencies that are either defense contractors or are undertaking major defense-related work. None could demonstrate that they have focused their attention on the small-to-mid-size companies, such as biotechnology companies, that officials of all three agencies told us are least likely to be aware of deemed export licensing requirements. Commerce licensing officials, Commerce, ICE, and FBI law enforcement officials, and representatives of most of the 33 companies, universities, and agencies that we met with as part of our field work stated that many small-to-mid-size companies, particularly in quickly expanding fields such as biotechnology, are not aware of deemed export licensing requirements. Commerce, ICE, and FBI officials attributed the lack of awareness to the sheer number of such companies and the lack of staffing to address these numbers. For instance, FBI officials told us that in the San Francisco Bay Area alone there are close to 500 biotechnology companies, most of which are small-to-mid size, and only a limited number of Commerce, ICE, and FBI officials to provide outreach.⁴⁵

In written comments on this report, the FBI stated it has conducted deemed export outreach to small-to-mid-size biotechnology companies through several venues, including strategic task forces, counterintelligence working groups, conferences, and other initiatives in coordination with the U.S. intelligence community and federal law enforcement agencies, including ICE and Commerce. However, FBI did not provide us with evidence of this outreach except for a single-page document whose details about the companies that the FBI met with had been entirely redacted. For that reason, we cannot validate the FBI's assertion.

Appendix III provides a summary of Commerce's and ICE's outreach seminars, conferences, meetings, discussions, and e-mails during fiscal years 2004 through 2009. As FBI classified its outreach data, we cannot present it in this report.

⁴⁵Commerce and ICE officials provided us with the number of staff in their San Francisco Bay Area offices that are dedicated full time to export control activities; however, FBI officials told us they could not provide the number of staff dedicated full time to export control activities because they do not track the information in this manner.

Commerce Has Taken Actions to Clarify the Regulatory Definition of “Use” Technology but Confusion About Its Application May Remain

In response to a Commerce IG recommendation to modify the definition of “use” technology that determines whether a deemed export licensing requirement is triggered, Commerce has clarified the definition. However, as one example shows, this clarification may not have eliminated the confusion surrounding the application of this regulation. In March 2004, the Commerce IG stated that confusion exists over what is meant by “use” of EAR-controlled equipment by foreign nationals, especially in relation to fundamental research.⁴⁶ According to Commerce’s interpretation, “use” technology is specific information necessary to perform all six of the following activities: installing, operating, maintaining, repairing, overhauling, and refurbishing an item.⁴⁷ If the technology available to the foreign national does not meet all six of these attributes, then it is not “use” technology for deemed export licensing purposes. For example, if a foreign national only has access to information that is necessary to “operate” equipment, as opposed to information necessary for all six activities, a release of “use” technology to the foreign national has not occurred. Consequently, the information at issue would not be subject to the EAR and, hence, no license requirement would apply. According to Commerce officials, the definition is designed to allow foreign nationals conducting research to operate controlled equipment, while at the same time preventing these individuals from reverse-engineering the equipment. The Commerce IG pointed out that the definition was confusing because it did not take into account that controlled information is often transferred to foreign nationals as part of the process of training the foreign national to operate the machine.⁴⁸ As evidence of the confusion, the Commerce IG

⁴⁶National Security Decision Directive 189 defines fundamental research as basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community. Examples include work on nuclear engineering, lasers, sensors, ceramics, radars, and virology. The EAR states that certain technology and software that arise during or result from fundamental research, the results of which are intended to be published, are not subject to deemed export licensing requirements.

⁴⁷15 C.F.R. 772.1 and “Questions and Answers to Supplement Clarification of Deemed Export Related Regulatory Requirements” at <http://www.bis.doc.gov/deemedexports/deemedexportssupplementqa.html>, last visited September 30, 2010.

⁴⁸The DEAC also noted that the definition of “use” for a deemed export license appeared not to withstand the test of logical consistency, since the definition could allow two individuals working in collusion to perform enough functions to gain full knowledge of all six activities without triggering a requirement for a deemed export license. Commerce officials noted in technical comments provided to us in November 2010 that such a circumstance could constitute an evasion of the EAR and evasion would be a prosecutable violation of the EAR.

reported on differences among Commerce senior licensing officials, multilateral export control regimes, and DTSA in interpreting “use” as applied in the CCL and the control lists from the four multilateral export control regimes. These differences in interpretation are critical in determining how to implement and enforce the deemed export provisions in the EAR, according to the Commerce IG. For instance, while some of the university and U.S. government officials who spoke to the Commerce IG said they believed that “use” technology in the context of fundamental research is exempt under the regulations, Commerce holds that “use” technology is subject to the deemed export provisions regardless of whether the research being conducted with that equipment is fundamental or not. The IG reported that many university and government laboratories would need to seek deemed export licenses for some foreign nationals working with controlled equipment or otherwise restrict their access to such equipment.

In response to the Commerce IG’s recommendation, Commerce stated that it would work with State and DOD to determine whether the definition of “use” technology should be modified, and has taken actions to clarify the definition as of May 2006. In 2005, Commerce sought public comments prior to making any revision to the regulation, and companies and universities raised numerous concerns about the proposed revision.⁴⁹ In a May 2006 *Federal Register* notice, Commerce clarified that all of the activities listed in the definition of “use” technology are required to trigger a deemed export licensing requirement, and did not modify its definition.⁵⁰ Commerce stated that this clarification resolved any inconsistency suggested by the IG report.⁵¹ Commerce also posted questions and answers on its Web site to provide additional information clarifying deemed export regulatory requirements in response to the IG report.⁵² Despite these actions taken by Commerce, the IG does not believe that Commerce fully implemented its recommendation to modify the definition of “use” of EAR-controlled equipment by foreign nationals.

⁴⁹Revision and Clarification of Deemed Export Related Regulatory Requirements, 70 Fed. Reg. 15,607 (Mar. 28, 2005).

⁵⁰71 Fed. Reg. 30,840.

⁵¹*Id.*

⁵²<http://www.bis.doc.gov/deemedexports/deemedexportssupplementqa.html>.

However, as shown by uncertainty within Commerce over the definition of “use” technology that resulted in a misunderstanding with NIH, Commerce’s clarification may not have eliminated the confusion. Based on guidance from Commerce on the definition of “use” technology, NIH applied for 37 deemed export licenses, which Commerce processed over a 17-month period before verbally advising NIH that it no longer needed to apply for such licenses, though the definition itself remained the same. A May 2007 Commerce presentation discussing Commerce’s clarification of the definition of “use” technology raised concerns among NIH officials that they might now be subject to deemed export licensing requirements, since they employed foreign nationals to work in new highly secure laboratories with controlled technologies, according to NIH officials. Prior to this presentation, NIH had considered itself not subject to these requirements because its research was fundamental. As a result, NIH initially requested additional guidance from Commerce about deemed export licenses in April 2008, according to NIH officials and documents. In response to the NIH inquiry, Commerce said that NIH should apply for a deemed export license, according to NIH officials. From August 2008 to December 2009, NIH applied for 37 deemed export licenses out of concern that it might be subject to deemed export licensing requirements; Commerce approved 28 and returned without action 9 others. In February 2009, a Commerce e-mail to NIH raised further concerns by requesting a letter of explanation for the presence of foreign national scientists in NIH laboratories without appropriate deemed export licenses during the time period when NIH had considered itself not subject to these requirements. However, according to NIH officials and e-mails, in December 2009, a Commerce official verbally informed NIH that it could in fact claim the fundamental research exemption and need apply for no further deemed export licenses, based on the definition of “use” technology. Commerce officials said the confusion over the NIH’s employment of foreign nationals to work in the new laboratories was solved due to a better understanding of NIH’s business process in relation to the definition of “use” technology and fundamental research.

Commerce and Other Agencies Have Not Implemented Recommended Changes to Improve Enforcement of Deemed Exports

Commerce and other agencies have not implemented recommendations that we and the Commerce IG made to improve the enforcement of deemed exports. First, notwithstanding our 2002 and the Commerce IG's 2004 recommendations for Commerce to establish a program to monitor companies', universities', and agencies' compliance with deemed export license security conditions, Commerce continues to lack such a program. Second, in its efforts to detect unlicensed deemed exports, Commerce does not use all existing DHS immigration data, notwithstanding our 2002 recommendation that it make more use of such data. Finally, notwithstanding our 2006 report recommendation to enhance coordination, Commerce, ICE, and FBI continue to lack written agreements defining the current roles and responsibilities among agencies. Officials said that deemed export enforcement coordination continues to be a challenge after the creation of interagency export enforcement task forces and networks.

Commerce Continues to Lack a Program to Monitor Compliance with License Security Conditions

Commerce continues to lack a monitoring system to ensure companies', universities', and agencies' compliance with security conditions in deemed export licenses. Officials at Commerce's enforcement field offices in Boston, Los Angeles, and San Francisco stated that Commerce does not currently have a program to monitor compliance with firms' deemed export license security conditions—notwithstanding our 2002 and the Commerce IG's 2004 recommendation to create such a program.

In 2002, we reported that Commerce did not have a program to monitor compliance with the license security conditions imposed on almost all deemed export licenses approved.⁵³ We recommended that Commerce work with DOD, State, and Energy to develop a risk-based program to monitor compliance with deemed export licensing security conditions. In response, Commerce asserted it had an effective monitoring system but stated it would explore the practicality of our recommendation.⁵⁴

The Commerce IG has also reported that Commerce lacks a monitoring system to ensure compliance with security conditions in deemed export licenses. In 2004, the Commerce IG reported that Commerce was not

⁵³GAO-02-972.

⁵⁴We disagreed with Commerce's assertion because its monitoring system then consisted of conducting administrative checks to ensure that firms were submitting the correct paperwork.

performing on-site inspections or reviews to ensure compliance with export laws and regulations related to controls over the release of export-controlled technology to foreign nationals in the United States. The IG stated that the lack of compliance, monitoring, and adequate policies could degrade the integrity of the interagency licensing process. The Commerce IG further reported that because Commerce was not performing on-site inspections or reviews of entities holding an export license for the release of export-controlled technology to foreign nationals to ensure compliance with license conditions, license holders were not held accountable for complying with license conditions. Commerce informed the IG that it was not monitoring compliance with any deemed export licenses because it did not have the resources to do so. As a result, the IG concluded that the same companies were continually receiving export licenses for the release of export-controlled technology to foreign nationals regardless of whether they complied with previous license conditions. The IG recommended that Commerce develop a compliance program to effectively evaluate deemed export license holders' compliance with license conditions. In response to the IG's recommendation, Commerce stated that it would establish a pilot program to determine compliance with deemed export license conditions.

In fiscal year 2006 Commerce established a program to monitor licensing conditions, but discontinued it after fiscal year 2007. Commerce officials cited competing priorities and budget constraints as factors that resulted in the discontinuation of this program.

DOD officials told us in 2002 that deemed export licenses need these security conditions to mitigate the risk to U.S. national security of releasing controlled dual-use technology to certain foreign nationals. DOD officials repeated this assertion to us in August 2010. Commerce uses several of these security conditions to limit the level of technology for transfer to foreign nationals who may be in employment or academic settings in which an entity might require deemed export licenses for release of controlled technology to the foreign national. For example, security conditions might bar foreign nationals from (1) unmonitored use of high-performance computers, (2) involvement in the design of computers that exceed a specified performance limit, and (3) accessing technical data on advanced microprocessors or certain types of lithography equipment. DOD officials said that security conditions are critical to DOD's willingness to recommend approval for many deemed export license applications during the interagency deemed export license review process.

Although Commerce lacks a monitoring system to ensure this compliance, it includes language in many deemed export licenses requiring applicants to develop procedures for ensuring compliance with such security conditions in approved licenses and to provide copies of these procedures to Commerce. These instructions specify that Commerce “will monitor [security conditions] to ensure that the applicant’s compliance is effective.”⁵⁵

Commerce Does Not Use All Existing DHS Immigration Data to Detect Potential Unlicensed Deemed Exports

Notwithstanding our 2002 recommendation, Commerce does not screen all DHS immigration data—H-1B change-of-status visa applications submitted domestically—to identify foreign nationals who may be engaging in release of technology or source code that requires a deemed export license. During fiscal years 2004 through 2009, about 361,000 foreign nationals applied for a change of status to an H-1B visa within the United States. Our 2002 report found that Commerce did not screen thousands of Immigration and Naturalization Service (whose function processing applications for immigration benefits was placed within USCIS) immigration applications from foreign nationals already in the United States. We recommended that Commerce use these immigration data to identify foreign nationals who could be engaging in a transfer of technology or source code requiring a deemed export license. Concurring with this recommendation, Commerce consulted DHS, which suggested the establishment of a referral process so that any changes in visa status potentially requiring deemed export licenses are forwarded to Commerce for review. The DHS IG reported in 2004 that DHS was not providing information to Commerce that could support its efforts to identify and investigate potential violations related to the release of export-controlled technology to foreign nationals. As a result, information from thousands of change-of-status visa applications filed domestically with USCIS was not reviewed to generate investigative leads for Commerce, according to the IG. The IG recommended that USCIS provide Commerce with access to data from foreign nationals’ approved change-of-status applications to help identify possible investigative leads for follow up. DHS management concurred with these recommendations.

USCIS began in early 2010 to respond to these recommendations to screen thousands of DHS immigration change-of-status visa applications

⁵⁵Department of Commerce, Bureau of Industry and Security, “Guidelines for Preparing Export License Applications Involving Foreign Nationals.”

submitted domestically by proposing a revision of the USCIS form that employers must complete, which among other things would change a foreign national's immigration status to H-1B specialty employment. Commerce officials said that they have been working with USCIS to make such data easier to analyze. As a result of this collaboration, USCIS issued notices in the *Federal Register* in February and June 2010 requesting comments about a proposed change to the form employers must complete to change a foreign national's immigration status to H-1B specialty employment, request an extension of status, or employ a foreign national outside the United States.⁵⁶ This change will require employers to acknowledge if the position for which they want to hire a foreign national could require a deemed export license. In August 2010, USCIS officials told us that the comment period had ended and the revised form containing the proposed change had been submitted to the Office of Management and Budget for review.⁵⁷ According to USCIS, in October 2010 the Office of Management and Budget approved the revision to the form. However, USCIS noted it is not able to electronically track employers' responses to this new section of the form. See appendix IV for a draft of the form change.

In addition to making it easier for Commerce to screen thousands of H-1B change-of-status visa applications submitted domestically, Commerce, ICE, and FBI officials said that, if implemented, the addition of a "deemed export acknowledgement" section to the form could make it easier to enforce deemed export control regulations by helping to ensure that companies employing foreign nationals endeavor to comply with the EAR. Since our 2002 report, the U.S. government levied criminal convictions and civil penalties totaling about \$2.3 million against 14 companies and two individuals for violating deemed export regulations. Commerce, Justice, ICE, and FBI officials told us that one reason for the low number of criminal convictions and civil penalties is the difficulty of proving that an individual or organization willfully intended to violate deemed export regulations. According to Commerce, "willful intent" is a criminal standard

⁵⁶Agency Information Collection Activities: Form I-129, Revision of an Existing Information Collection; Comment Request, 75 Fed. Reg. 6,212 (Feb. 8, 2010); and Agency Information Collection Activities: Form I-129, Revision of an Existing Information Collection; Comment Request, 75 Fed. Reg. 37,822 (June 30, 2010). According to USCIS, other nonimmigrant visa categories will also be required to file the deemed export certification.

⁵⁷Under the Paperwork Reduction Act of 1980 (Pub. L. No. 96-511, 94 Stat 2812) the Office of Management and Budget is required to review all proposed changes in government forms that could result in an added collection burden on the public.

that only applies in the context of criminal deemed export prosecution. According to Commerce, while a deemed export certification would rarely provide sufficient evidence to prove that an entity willfully intended to violate deemed export regulations, it could be used to support a false statement charge or other violation of the EAR. This could potentially lead to an increase in the number of successful deemed export investigations resulting in penalties.

Changes That Commerce, Justice, ICE, and FBI Implemented Have Not Fully Resolved Deemed Export Enforcement Coordination Weaknesses, According to Officials

Changes that Commerce, Justice, ICE, and FBI have made since our 2006 report to enhance coordination among export enforcement agencies have not fully resolved deemed export enforcement coordination weaknesses, according to officials of these agencies in areas we visited. In order to address overall weaknesses in export enforcement coordination, our 2006 report recommended that the enforcement agencies establish a task force to evaluate options to improve coordination and cooperation among export enforcement investigative agencies. These options could include (1) creating new or updating existing operating agreements between and among these agencies, (2) identifying and replicating best practices for routinely collaborating on or leading investigations, and (3) establishing a mechanism for clarifying roles and responsibilities for individual export control cases involving foreign counterintelligence.

Justice and ICE made changes in response to these recommendations, but these changes have not fully resolved the coordination weaknesses, according to Commerce, ICE, and FBI officials. According to Justice officials, Justice began setting up Counter-Proliferation Task Forces in several judicial districts throughout the country beginning in 2008. In addition, Justice has established a Technology Protection Enforcement Group to improve coordination among the export enforcement agencies at senior levels. Moreover, according to ICE, the three agencies have collaborated with one another to improve matters related to deemed exports as part of the interagency task force established by the President in August 2009 to examine export control reforms. However, officials from Commerce, ICE, and FBI said the task forces have not fully resolved coordination challenges in part because each agency maintains discretion over the degree of its participation in the task forces. Moreover, outdated or absent written agreements among agencies have not defined overlapping enforcement jurisdictions. ICE established the National Export Enforcement Coordination Network (NEECN) in fiscal year 2007 to coordinate investigations by DHS, law enforcement, intelligence, and foreign officials to prevent countries of concern from acquiring controlled technologies. Commerce, ICE, and FBI officials told us that

representatives from their agencies attend weekly NEECN meetings where participants coordinate export control investigations and may work to resolve conflicts among agencies. However, ICE officials stated that NEECN primarily focuses on investigations involving the export of goods, rather than deemed exports.

Deemed export enforcement coordination challenges among Commerce, ICE, and FBI stem in part from overlapping jurisdictions and the lack of defined roles and responsibilities among these agencies.⁵⁸ For example, Commerce officials said that ICE does not always coordinate with Commerce to ensure that ICE transfers cases without criminal penalties that require additional follow up to Commerce so that it may consider civil penalties. Commerce and DHS officials said that coordination and collaboration among deemed export enforcement agencies became more challenging in 2004 when the Attorney General reiterated the FBI's role as the lead enforcement agency in all export control cases "relating to any foreign counterintelligence matter."⁵⁹ Commerce and ICE officials said that coordination with FBI can be particularly challenging because FBI often classifies information for investigations—making it more difficult for Commerce and ICE officials to use information originating from the FBI due to its classification. Commerce, FBI, and ICE officials said that coordination and cooperation continue to hinge on the relationships between individual investigators across agencies in the absence of current formal agreements. A 1993 agreement between Customs and Commerce outlines the investigative responsibilities of each agency, but it does not reflect departmental changes that occurred as a result of the establishment of DHS in March 2003—including the creation of ICE. In addition, ICE and FBI do not have any formal agreement for collaboration to coordinate cases involving export control violations. Because the enforcement agencies do not have formal agreements for collaboration, the lack of defined roles and responsibilities persists.

⁵⁸According to FBI, it has been designated to take charge of investigative work in matters relating to espionage, sabotage, subversive activities, and related matters, including investigating any potential violations of the Arms Export Control Act, the Export Administration Act, the Trading with the Enemy Act, or the International Emergency Economic Powers Act, relating to any foreign counterintelligence matter.

⁵⁹Delegations of Authority; Federal Bureau of Investigation, 69 Fed. Reg. 65,542 (Nov. 15, 2004).

Conclusions

In 2002 we reported that the deemed export licensing system did not provide adequate assurance that U.S. national security interests were protected from countries that gather information on dual-use technologies to build weapons systems. This conclusion remains relevant today. In the 8 years since the publication of our report and its recommendations, we and other organizations have issued additional reports with further recommendations to strengthen the deemed export system. Nonetheless, Commerce and other agencies have not implemented key recommended changes. As a result, U.S. agencies acknowledge the continued risk of releasing controlled technologies to foreign nationals in the United States, particularly in rapidly expanding sectors of the economy such as biotechnology. Commerce has reduced its screening of overseas visa applications that it had used to refer to enforcement offices to help determine if companies should have applied for deemed export licenses and for outreach and does not screen thousands of H-1B change-of-status visa applications submitted domestically. The United States approved about a million foreign nationals from 13 countries of concern to work in high-technology occupations in the United States, while approving deemed export licenses for a much smaller number of foreign nationals from the same countries to work in related technologies. Although not all are required to have deemed export licenses, the approximately 1 million foreign nationals with specialty occupation visas from the 13 countries of concern that we identified in our work represent a pool of risk that Commerce could use to assess the nature and scope of compliance with deemed export requirements and to better direct outreach and enforcement efforts. Until the scope of the risk is assessed, it will be difficult for U.S. agencies to determine where their outreach, monitoring, and enforcement efforts should be focused and to know how to correct the deficiencies that we and the Inspectors General have reported in the past. The executive branch has announced plans to reform the export control system, including the export licensing and enforcement systems for deemed exports. Resolving the deficiencies identified repeatedly since 2002 could be important to the effectiveness of any new export control reform.

Recommendations for Executive Action

We recommend the Secretary of Commerce take the following two actions:

- To better direct its efforts to detect possible unauthorized deemed exports and conduct outreach, in consultation with the U.S. Attorney General and the Secretary of Homeland Security, assess the extent to which foreign nationals from countries of concern who were issued specialty occupation

visas also should have been covered by deemed export license applications. This assessment, using all available data from the three agencies, might involve reviewing a sample of H-1B specialty visas for employment in particular technologies, such as computers, electronics, or biotechnology, to determine whether employers of the applicants should have applied for deemed export licenses. The Secretary should use the results of this assessment to identify the vulnerabilities in the deemed export control system; plan to better target and inform companies, universities, and agencies about deemed export licensing requirements; and develop and implement procedures for incorporating DHS immigration data into its enforcement screening activities.

- To ensure that Commerce takes actions to more fully address the deficiencies identified in this and prior reports as part of any export control reform effort, report to Congress the specific steps being taken to implement past GAO and Commerce IG recommendations in the context of the current Export Control Reform Initiative. These recommendations relate to (1) improving outreach; (2) implementing a program to monitor compliance with deemed export license security conditions; (3) screening foreign nationals who change their immigration status in the United States for deemed export requirements; and (4) improving coordination among the law enforcement agencies responsible for enforcing deemed export license regulations.

Agency Comments and Our Evaluation

We provided a draft of this report for comment to the Departments of Commerce, State, Defense, Homeland Security, Justice, and Energy; as well as the FBI and NIH. Commerce and FBI provided written comments, while the Departments of State, Defense, and Energy, and NIH did not provide comments. The Departments of Commerce and Homeland Security, and FBI provided technical comments, which we have incorporated as appropriate.

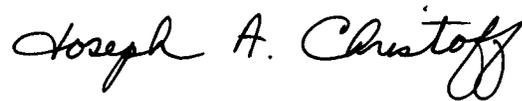
In its written comments, Commerce agreed with our recommendation to assess the extent to which foreign nationals from countries of concern who were issued specialty occupation visas also should have been covered by deemed export licenses and use the results to identify vulnerabilities in the deemed export control system, target and inform employers about deemed export licensing requirements, and incorporate immigration data into its enforcement screening activities. Commerce also stated that it would review prior GAO and Inspectors General recommendations as part of the ongoing Export Control Reform process. However, Commerce did not comment on our recommendation to report to Congress on the steps being taken to implement past GAO and Commerce IG recommendations.

We believe that this recommendation remains valid because resolving the deficiencies in deemed export licensing and enforcement identified repeatedly since 2002 could be critical to the success of any export control reform initiative. Commerce's written comments are contained in appendix V.

In its written comments, FBI stated it has conducted deemed export outreach to small-to-midsize biotechnology companies through several venues, including strategic task forces, counterintelligence working groups, conferences, and other initiatives, in coordination with the U.S. intelligence community and federal law enforcement agencies, including ICE and Commerce. FBI also stated that through participation in the NEECN and other arenas, FBI, ICE, and Commerce have worked to resolve coordination of export enforcement activities. In our report, we discuss the role of the NEECN, which ICE established to help coordinate export control investigations, but note that ICE officials told us that the NEECN primarily focuses on export control investigations involving goods, rather than deemed exports. Finally, FBI also commented on the relationship between additional attention on deemed exports and the need for more resources for outreach and investigation. We did not address this topic in the scope of our work. FBI's written comments are contained in appendix VI.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to the Attorney General; the Secretaries of Commerce, Defense, Homeland Security, and State, and other interested parties or interested congressional committees. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have questions about this report, please contact me at (202) 512-8979 or at christoffj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix VII.

A handwritten signature in black ink that reads "Joseph A. Christoff". The signature is written in a cursive style with a large, stylized initial "J".

Joseph A. Christoff
Director, International Affairs and Trade

Appendix I: Scope and Methodology

To examine the risk that foreign nationals in the United States may gain unauthorized access to controlled dual-use technologies, we reviewed unclassified assessments discussing the methods that countries use to illicitly obtain controlled technologies and the technologies most at risk. These include the *Annual Report to the Congress on Foreign Economic Collection and Industrial Espionage* issued during fiscal years 2002-2008 by the Office of the National Counterintelligence Executive. Using law enforcement data, we also documented the total number of deemed export violations committed during the 2002-2009 period. Not all foreign nationals approved for H-1B visas work in occupations that could involve controlled technology. For this reason, to estimate the risk that foreign nationals working in high-technology fields could gain unauthorized access to controlled technology, we selected four broad specialty occupation fields based on an examination of the categories of technology contained in the Export Administration Regulations (EAR) and a review of unclassified reports detailing the types of dual-use technologies that countries are attempting to obtain. The four broad specialty occupation fields we selected were occupations in the computer, engineering, and physical and biological sciences, including biotechnology. We excluded other H-1B occupational fields such as those in the social sciences, the arts, and modeling because these typically do not involve work in researching or manufacturing high-technology applications. We then quantified the number of foreign nationals approved for the specialty occupation visas in these four broad specialty occupations from 13 countries of concern using U.S. Citizenship and Immigration Service (USCIS) immigration data for fiscal years 2004-2009. We selected this time period due to data reliability concerns about data produced before fiscal year 2004.

The countries of concern whose foreign nationals we included as part of this report were selected based on several sources. First, the EAR groups countries into five main groups (A through E) by their level of restrictions and concern, varying from country to country. The most restricted destinations—those in country group E—are the embargoed countries and those countries designated as supporting terrorist activities. The next most restricted destinations—those in country group D—are those for which worldwide restrictions on some products apply, controlling items for national security, and nuclear, chemical/biological, and missile proliferation reasons. We judgmentally selected six countries from country group D to which Commerce applies at least three of the four reasons for control. In addition, we selected two additional countries of concern based on (1) intelligence reports and discussions with U.S. law enforcement officials, (2) an analysis of trends in deemed export enforcement cases from fiscal years 2002 through 2009, and (3) the

publicly reported associations of one country's citizens with export enforcement cases over the past several years. We assessed the reliability of USCIS and Commerce data by reviewing reports discussing the limitations of these databases and meeting with USCIS and Commerce officials responsible for managing the databases. Based on the information obtained, we determined the data were sufficiently reliable for our use.

To examine the extent to which Commerce and other agencies have implemented recommended changes to the deemed export licensing process, we reviewed the recommendations made in GAO and Commerce and interagency Inspectors General reports issued during fiscal years 2002-2009 as well as the report issued by the Deemed Export Advisory Committee (DEAC). Based on the information in these reports, we documented the concerns raised in the reports and the agency's response. We provided Commerce with a matrix summarizing the concerns raised and the agency's responses and obtained its views. We met with officials of the agencies responsible for reviewing license applications in Washington, D.C.—principally Commerce, but also the Departments of State, Defense, and Energy—to determine how information is shared, as well as the agencies that conduct outreach and enforce compliance with licensing conditions and regulations—Commerce, ICE, and FBI. We met with 33 associations, companies, nonprofits, universities, and state government agencies to obtain their views about the extent to which companies, universities, and firms are familiar with deemed export license regulations. These were judgmentally selected based on our review of Commerce's fourth quarter fiscal year 2007 and fiscal year 2008 outreach plan, which showed that Commerce planned to focus on biotechnology as one of several areas for outreach and an examination of the USCIS H-1B specialty occupation visa database.

To examine the extent to which Commerce and other agencies have implemented recommended changes to the deemed export enforcement system, we reviewed the recommendations contained in GAO, and Commerce and interagency Inspectors General reports issued during fiscal years 2002-2008, as well as the report issued by the DEAC. Based on the information in these reports, we documented the concerns raised and the agencies' responses. We provided Commerce with a matrix summarizing the concerns raised and the agency's responses and obtained its views. We met with officials of the agencies responsible for monitoring licensing conditions and enforcement deemed export rules and regulations—principally Commerce, but also ICE and FBI. We also met with USCIS officials to discuss a proposed change to their Form I-129 that would require employers to acknowledge deemed export licensing requirements.

We conducted fieldwork in Washington, D.C., as well as Boston, Los Angeles, and San Francisco. We selected these cities for fieldwork because all three have major clusters of biotechnology firms.

We conducted this performance audit from July 2009 to February 2011 in accordance with generally accepted auditing standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Comparison of Numbers of Foreign Nationals from 13 Countries of Concern to Foreign Nationals from the Same Countries Covered by Deemed Export Licenses, Fiscal Years 2004 to 2009

During fiscal years 2004 to 2009, a total of approximately 1.05 million foreign nationals from 13 countries identified by Commerce and other sources as countries of proliferation or other concerns were approved to work in the United States in specialty occupations that included computers, electronics, engineering, and biotechnology. Of the approximately 1.05 million, about 94 percent were foreign nationals from four countries. By comparison, foreign nationals from the same four countries accounted for 98 percent of the foreign nationals from the countries of concern covered by deemed export licenses during this period. Table 1 compares the number of foreign nationals approved to receive H-1B specialty occupation visas during fiscal years 2004 through 2009 from the 13 countries of concern we selected to the number of foreign nationals from the same countries covered by deemed export licenses. Appendix I provides an explanation of how we selected these countries.

Table 1: Comparison of Numbers of Foreign Nationals from 13 Countries of Concern with Specialty Occupation Visas in Four Occupational Fields to Numbers of Foreign Nationals from the Same Countries Covered by Deemed Export Licenses, Fiscal Years 2004 to 2009

Country	Number of foreign nationals	Number of foreign nationals covered by deemed export licenses
A	148,998	2,184
B	818,468	444
C	14,300	314
D	5,772	188
E	25,014	14
F	22,755	14
G	9,609	9
H	2,453	6
I	188	2
J	49	2
K	813	1
L	249	0
M	22	0
Total	1,048,690	3,178

Source: GAO analysis of USCIS and Commerce data.

Appendix III: Summary of Outreach Activities of Commerce and ICE

Commerce provides educational information and outreach about deemed export rules and regulations to companies, universities, and agencies in three ways. Commerce's Export Administration provides educational outreach primarily through export control seminars and conferences, some of which were general in nature and some of which exclusively focus on deemed exports. Commerce-sponsored general export control seminars and conferences have a module that addresses deemed exports. Commerce has also made increasing use of its Internet Web site, which features training modules and Webinars, some of which focus on deemed exports. Commerce's Export Administration also participates in seminars and conferences sponsored by other private and public sector organizations. In addition, Commerce's Office of Export Enforcement provides investigative-related outreach through meetings with associations and companies. As part of this outreach, in fiscal year 2005 Commerce's Office of Export Enforcement began its Project Guardian program to focus on outreach to companies and universities conducting research or manufacturing specific goods and technologies that illicit proliferation networks seek to acquire. Commerce Office of Export Enforcement officials told us that each of Commerce's nine export enforcement field offices could develop outreach plans for their areas of jurisdiction; however, we found that none of the three Commerce field offices in the cities that we visited—Boston, Los Angeles, and San Francisco—had developed such plans. All three cities are important in the development of cutting edge commercial technology—for instance, Boston and San Francisco have major concentrations of biotechnology companies.

ICE and FBI also provide investigative-related outreach to associations, companies, and universities through association-sponsored seminars and meetings with university and company officials.

Table 2 summarizes the two agencies' export control outreach efforts.

**Appendix III: Summary of Outreach Activities
of Commerce and ICE**

Table 2: Summary of Outreach Efforts by Commerce and ICE, Fiscal Years 2004-2009

Agency	Type of outreach	Number of general export control outreaches	Outreaches specific to deemed exports
Commerce Export Administration	Educational	About 300 Commerce-sponsored conferences and seminars reaching about 25,000 people Commerce also participated in about 200 conferences and seminars sponsored by other organizations reaching about 12,000 people	About 600, including in-person presentations, e-mails, and phone conversations
Commerce Office of Export Enforcement	Investigative	About 3,500	About 50
ICE	Investigative	About 9,500	None. However, according to ICE officials, the agency incorporates materials on deemed exports as part of its outreach efforts

Source: GAO analysis of Commerce and ICE data.

Note: The FBI also provided outreach data; however, because the data provided were classified, we did not include them in this report.

Appendix IV: Draft of DHS’s Changes to the Form I-129 “Petition for Nonimmigrant Worker”

In fiscal year 2002, we recommended that Commerce use all existing U.S. immigration data to identify foreign nationals who could be subject to deemed export licensing requirements. Commerce agreed with the recommendation and officials told us that they have been working with USCIS to make such data easier to analyze.¹ As a result of this collaboration, USCIS issued notices in the *Federal Register* in February and June 2010 requesting comments about a proposed change to the Form I-129 employers must complete to enable foreign nationals to apply for new employment, extend their status, or change a foreign national’s immigration status to H-1B specialty employment or other status. This change would require employers to acknowledge if the position for which they want to hire a foreign national could require a deemed export license. The revised form contains two parts: One provides instructions on how to fill out the form, and the other contains the form itself. Figure 4 contains the revised form, which according to USCIS, was approved by the Office of Management and Budget in October 2010.²

¹GAO, *Export Controls: Department of Commerce Controls over Transfers of Technology to Foreign Nationals Need Improvement*, [GAO-02-972](#) (Washington, D.C.: Sept. 6, 2002).

²Under the Paperwork Reduction Act of 1980 (Pub. L. No. 96-511, 94 Stat 2812), the Office of Management and Budget is required to review all proposed changes in government forms that could result in an added collection burden on the public.

Figure 4: Revisions to USCIS Form I-129 That Address Deemed Export Concerns

Certification Pertaining to the Release of Controlled Technology or Technical Data to Foreign Persons in the United States

U.S. Export Controls on Release of Controlled Technology or Technical Data to Foreign Persons. The Export Administration Regulations (EAR) (15 CFR Parts 770-774) and the International Traffic in Arms Regulations (ITAR) (22 CFR Parts 120-130) require U.S. persons to seek and receive authorization from the U.S. Government before releasing to foreign persons in the United States controlled technology or technical data. Under both the EAR and the ITAR, release of controlled technology or technical data to foreign persons in the United States—even by an employer—is deemed to be an export to that person's country or countries of nationality. One implication of this rule is that a U.S. company must seek and receive a license from the U.S. Government before it releases controlled technology or technical data to its nonimmigrant workers employed as H-1B, L-1 or O-1A beneficiaries.

Requirement to Certify Compliance with U.S. Export Control Regulations. The U.S. Government requires each company or other entity to certify that it has reviewed the EAR and ITAR and determined whether it will require a U.S. Government export license to release controlled technology or technical data to the beneficiary. If an export license is required, then the company or other entity must further certify that it will not release or otherwise provide access to controlled technology or technical data to the beneficiary until it has received from the U.S. Government the required authorization to do so. The petitioner must indicate whether or not a license is required on Page 5, Part 6 of Form I-129.

Application

Part 6. Certification Regarding the Release of Controlled Technology or Technical Data to Foreign Persons in the United States

(For H-1B, H-1B1 Chile/Singapore, L-1, and O-1A petitions only. This section of the form is not required for all other classifications. See Page 3 of the Instructions before completing this section.)

Check Box 1 or Box 2 as appropriate:

With respect to the technology or technical data the petitioner will release or otherwise provide access to the beneficiary, the petitioner certifies that it has reviewed the Export Administration Regulations (EAR) and the International Traffic in Arms Regulations (ITAR) and has determined that:

- 1. A license is not required from either U.S. Department of Commerce or the U.S. Department of State to release such technology or technical data to the foreign person; or
- 2. A license is required from the U.S. Department of Commerce and/or the U.S. Department of State to release such technology or technical data to the beneficiary and the petitioner will prevent access to the controlled technology or technical data by the beneficiary until and unless the petitioner has received the required license or other authorization to release it to the beneficiary.

Source: U.S. Citizenship and Immigration Service.

Appendix V: Comments from the Department of Commerce



UNITED STATES DEPARTMENT OF COMMERCE
Under Secretary for Industry and Security
Washington, D.C. 20230

November 9, 2010

Mr. Joseph Christoff
Director, International Affairs and Trade
Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Christoff,

Thank you for the opportunity to comment on the draft Government Accountability Office (GAO) report entitled "Export Controls: Improvements Needed to Prevent Unauthorized Technology Transfers to Foreign Nationals in the United States (11-70)."

The Department of Commerce concurs with the first recommendation and will review the prior recommendations in the ongoing Export Control Reform process. The Department also has attached technical comments on the report.

If you need further assistance, please contact Mark Crace of the Office of Administration. Mr. Crace may be reached at (202) 482-8093 or via e-mail at mcrace@bis.doc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Eric L. Hirschhorn".

Eric L. Hirschhorn



Appendix VI: Comments from the Federal Bureau of Investigation



U.S. Department of Justice

Federal Bureau of Investigation

Washington, D. C. 20535-0001

November 23, 2010

Mr. Joseph Christoff
Director, International Affairs and Trade,
Government Accountability Office
441 G St., NW
Washington, DC 20548

Dear Mr. Christoff,

Thank you for the opportunity to review the draft Government Accountability Office (GAO) report entitled, *Export Controls, Improvements Needed to Prevent Unauthorized Technology Transfers to Foreign Nationals in the United States* (hereinafter, "Report"). In an effort to ensure the Federal Bureau of Investigation's (FBI) involvement in the area of deemed exports is accurately represented in the Report, I have attached our previously submitted factual accuracy comments for your direct consideration and review.

In addition, the FBI has previously identified to the GAO many areas of the Report which contain classified information. As discussed with your auditing team, the identification of vulnerabilities or specific areas of investigative focus must be redacted due to national security matters.

As noted in our earlier comments, the FBI enforces deemed export licence regulations by conducting criminal investigations as well as taking the lead in investigations involving counterintelligence and counterterrorism. The FBI has conducted outreach to small-to-mid-size companies in the biotechnology industry to foster awareness deemed exports pose. Specifically, the FBI has engaged biotechnology companies through several venues, including strategic task forces, counterintelligence working groups, conferences, and other initiatives. The FBI has also coordinated this outreach with the United States Intelligence Community and federal law enforcement agencies, including Immigration and Customs Enforcement (ICE) and Department of Commerce (DOC), Office of Export Enforcement on these outreach programs. Through participation at the National Export Enforcement Coordination Network (NEECN) and other arenas, the DOC, ICE, and the FBI have worked to resolve coordination of export enforcement activities.

As duly noted in your Report, in order to ensure that deemed exports receive additional attention, law enforcement agencies need to receive more resources, particularly for the areas of outreach and investigations.

Thank you for your efforts, and should you have any additional questions please do not hesitate to contact me or my office.

Sincerely,

C. Frank Figliuzzi
Deputy Assistant Director,
Counterintelligence Division

Attachment

UNCLASSIFIED when separated from CLASSIFIED attachment

Appendix VII: GAO Contact and Staff Acknowledgments

GAO Contact

Joseph A. Christoff, (202) 512-8979 or christoffj@gao.gov

Staff Acknowledgments

In addition to the individual contact named above, Jeff Phillips (Assistant Director), José M. Peña III, James E. Lloyd III, and Debbie Chung made key contributions to this report. Technical assistance was provided by Jena Sinkfield, Martin De Alteriis, Etana Finkler, Erin Godtland, Grace Lui, Kara Marshall, Amanda Miller, John Neumann, Nina Pfeiffer, Minette Richardson, Ellery Scott, and Pierre Toureille.

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