EXPORT CONTROLS IN UNIVERSITY RESEARCH: BASICS AND PROBLEM AREAS

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I. CONFIDENTIAL COMPANY INFORMATION: THE "DEEMED EXPORT" PROBLEM.

II. PUBLICATION RESTRICTIONS, PARTICULARLY IN FEDERALLY FUNDED RESEARCH.

III. USE OF EXPORT CONTROLLED EQUIPMENT.

INTRODUCTION: EXPORT CONTROLS AND OTHER RESOURCES.

Application of export control laws and regulations to University research is an important but, until recently, somewhat neglected issue. On one hand, the regulations issued by the Department of Commerce state that, generally, research conducted at US Universities will classify as "fundamental research". As such, the research results will be exempt from export controls. However, there are important limitations to that principle, some of which are not intuitively obvious, and it is quite possible for researchers unwittingly to destroy the fundamental research exemption. In addition, currently there is an unsettled issue about use of equipment that could have significant implications for the openness of the university research environment.

These materials present basic information about some central problems that university researchers need to understand. Additional issues will be addressed over time.

For a more in-depth discussion of export controls and university research, you may wish to review the COGR pamphlet, "Export Controls and Universities: Information and Case Studies," Feb. 2004, available at **http://cogr.edu** (link to "Educational Materials" and "Export Controls"). For materials relating to the current controversy about use of equipment, link to "Current Topics."

The Massachusetts Institute of Technology (MIT) has been a leader for many years in helping the university community understand and deal with export control issues. MIT's website, **http://web.mit.edu/osp** , has a range of excellent materials, some specifically designed for use by researchers. Particularly noteworthy is the recently-added, "Briefing on 'Deemed Exports' for Faculty Members and Senior Research Staff.'"

SOME BASICS OF EXPORT CONTROL LAWS

Export controls are fundamentally different from customs or tariffs. Export controls are legal prohibitions against exporting certain materials, software or technology without a license. Violators can face lengthy prison sentences and stiff fines. Export controls implement a range of national obligations and interests, such as honoring treaties (e.g., nuclear non-proliferation, conventions on chemical and biological weapons), protecting national security, and combating terrorism.

A. Blanket Restrictions.

The export laws include some blanket restrictions. A few countries, such Cuba and North Korea, are the subject of embargoes, and nothing can be exported to them. Similarly, there are lists of individuals and organizations that are associated with terrorism, and nothing can be exported to them. In addition, certain activities (such as development of weapons of mass destruction) are inherently contrary to the national interest, and any activity or export in support of those activities is illegal, no matter where it is conducted or who is conducting it.

B. Lists of Controlled Technologies.

Other than these blanket restrictions, U.S. export controls are built around two lists of controlled items, software and technologies. One, the U.S. Munitions List (USML), is part of the International Traffic in Arms Regulations (ITAR), which is administered by the State Department. The USML is relatively short (8-9 pages), but many of its provisions are very broad. In general, any item, software or technology that is developed for a specifically military application is likely to be subject to the ITAR. In addition, a few years ago items and associated software or technology intended for space launch were made subject to the ITAR. Therefore, satellite instrumentation of a non-military scientific nature is covered by ITAR.

The second list is the Commerce Control List (CCL), which is part of the Export Administration Regulations (EAR), administered by the Commerce Department. This list is long (over 175 pages) and contains many technologically complex descriptions. Generally, the EAR covers "dual use" items and technology—those which have both a military use and a significant civilian use. The CCL has ten broad categories;[1] each category includes separate listings of items (equipment and components, test equipment, materials), software and "technology" related to the items. "Technology" is any information (including designs or blueprints) that is necessary to develop, make, or use an item. There are 16 different reasons that an item or technology might be listed on the CCL. Depending on the reason, the restrictions on exports can be extensive (e.g., for national security, licenses are required to all locations except Canada), or narrow (anti-terrorism controls affect only a few countries).

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[1] Nuclear; materials, chemicals, microorganisms and toxins; materials processing; electronics; computers; telecommunications and information security; lasers and sensors; navigation and avionics; marine; and propulsion systems and space vehicles.

C. The Deemed Export Rule and Foreign Nationals.

Because universities are deeply involved in the development and transmission of information, export controls on "technology" (information) are of particular concern. This concern is intensified by the "deemed export" rule, which is as follows (EAR version):

> [R]elease of technology [or source code] subject to the EAR to a foreign national in the United States. . . is deemed to be an export to the home country or countries of the foreign national.

A "foreign national" is any person who is not a U.S. citizen or permanent resident of the U.S., or who has not been granted asylum. This includes virtually all our foreign students, post docs and visiting scholars and some of our newly arrived faculty.

D. Public Domain Information and the Fundamental Research Rule.

The deemed export rule has the potential to create major obstacles to involvement of foreign researchers in university research. However, both the ITAR and the EAR contain exemptions for information that is "publicly available" (EAR) or is in the "public domain" (ITAR). Under EAR, this exemption specifically includes information that is published and generally available (for sale, on-line or at libraries) and information taught in for-credit courses or teaching labs.

Of great importance for universities is the "fundamental research" rule, which is part of the publicly available/public domain regulations of both the EAR and the ITAR. Fundamental research is,

> … basic and applied research in science and engineering where the resulting information is ordinarily published and shared broadly within the scientific community.

Information that arises in the course of fundamental research is exempt from the EAR and the ITAR. Preserving the "fundamental research" status of university research permits the continued free interchange of information with the scientific community and the continued involvement of outstanding foreign students in the university's research programs.

PROBLEM AREA I: CONFIDENTIAL COMPANY INFORMATION AND DEEMED EXPORTS.

A. The Problem.

When a university receives company proprietary information in connection with research, revealing the information to a nonresident researcher (such as a foreign graduate student) might violate export control laws. Although the results of fundamental research are not subject to the EAR or the ITAR, that exemption does not apply to information that is not ordinarily published and it is not in the public domain. Thus, when confidential company information is involved, the export control rules may apply to that information.

The EAR describe this problem area as follows:

> The initial transfer of information from an industry sponsor to University researchers is subject to the EAR where the parties have agreed that the sponsor may withhold from publication some or all of the information so provided.

15 C. F. R. 734.8 (b) (4). A Q & A supplement to the regulations elaborates on this point as follows (at 15 C. F. R. Pt. 734, Supp. 1, Q/A D(2)):

> [I]f your company and the researchers have agreed to a prohibition on publication [of company proprietary information], then you must obtain a license or qualify for a License Exception before transferring the information to the university [if a foreign national graduate student from a country requiring an export license might have access to it].

The technologies delineated on the 175+ page Commerce Control List and on the ITAR Munitions List are subject to the "Deemed Export" rule. Determining whether a technology is on these lists is a complex legal/scientific exercise. The University generally is not in a position to evaluate whether a company's secret information is subject to export controls.

B. Some of the University's Approaches to the Confidential Information Deemed Export Problem.

1. Identifying the Problem:

a. We expect that sponsors will raise the issue. Sponsors sending export-controlled information into a generally open university research environment should alert the institution and the University's researchers in advance that they will be receiving restricted information.

b. We scrutinize research agreement documents for any of the following telltale signs of the issue (this is done primarily through the University's contracting office, the Office of Sponsored Projects Administration (SPA)):

(1) Any references to export control laws, ITAR, EAR;

(2) Any references to excluding, limiting or identifying foreign nationals, or to Sponsor's ability to approve research team members;

(3) Any restriction (other than boilerplate patent terms) on the publication of research results (see Problem Area II, below).

N.B. – Even a "side" agreement between the researchers and the sponsor to allow a restriction on publication of research results destroys the fundamental research exemption and triggers export control problems;

(4) These problems can arise in any agreement involving confidentiality—including grants, contracts, subcontracts, purchase orders, MTAs, confidentiality agreements, service agreements, equipment loan agreements, equipment purchase agreements.

c. We affirmatively require sponsors to identify any export controls involving their confidential information. The University adds a clause such as the following to confidentiality language:

> Prior to disclosing any confidential information, proprietary technical data or source code that is subject to export controls under federal law, Sponsor shall notify University in writing that the material is export controlled and shall identify the controls that apply.
>
> University shall have the right to decline or limit (a) the receipt of such information, and (b) any task requiring receipt of such information."

2. Managing the Problem

a. Avoid receiving any export-controlled information.

b. If that is not possible, the deemed export problem could still be avoided if the only individuals who need access to the information are the PI or other faculty researchers (assuming they are either U.S. citizens or permanent residents). Often, the members of the research team will not need to know the company's confidential information, although it may be helpful for the PI to have access to that information in designing the research and communicating results to the company.

c. Avoid bringing PI-accessed information onto the campus. Often the PI can access information at the company or through other methods that do not bring the information into a generally open university environment.

d. If PI-accessed information needs to be brought to campus, PIs should work with SPA and the General Counsel's office to develop an appropriate Technology Control Plan to assure information security.

e. If members of the research team need access to the information to conduct the research, the matter will require in-depth review. It may be necessary to apply for deemed export licenses for members of the research team; the technology control plan will need to provide security for a broader group; a broader consultation for approval of restricted research may be required.

PROBLEM AREA II: PUBLICATION RESTRICTIONS IN FEDERALLY FUNDED RESEARCH AGREEMENTS, OR AGREED TO BY A RESEARCHER INDIVIDUALLY

A. The Problem.

Any restriction on the right to publish the results of the research jeopardizes the "fundamental research" exemption from the EAR (and the ITAR). Publication restrictions trigger the "deemed export" rule and threaten the ability of at least some foreign nationals to participate in the research. Thus, publication restrictions are a very serious export control problem.

Over the past several years, the national university community has encountered hundreds of instances in which proposed contracts would have restricted publication of fundamental research. The University of Minnesota participated in a study group that catalogued over 100 such cases in late 2003 and early 2004. These problems have continued.

Such clauses not only destroy the fundamental research exemption from export laws, they are contrary to national policy, established by President Reagan in 1985, and repeatedly reaffirmed by the Administration over the past several years. National Security Decision Directive (NSDD) 189 (September 21, 1985) (President Ronald Reagan) provided as follows:

> It is the policy of this Administration that, to the maximum extent possible, the products of fundamental research remain unrestricted. It is also the policy of this Administration that, where the national security requires control, the mechanism for control of information generated during federally funded fundamental research in science, technology and engineering at colleges, universities and laboratories is classification. … No restrictions may be placed upon the conduct or reporting of federally-funded fundamental research that has not received national security classification, except as provided in applicable U.S. Statutes.

B. University of Minnesota Approaches to Publication Restrictions.

Publication restrictions not only create export control problems, more fundamentally, they are contrary to academic traditions and to the Board of Regents Policies, (a) Publication of Investigation Results, and (b) Research Secrecy. The University closely scrutinizes all research agreements for any restrictions on the right to publish and vigorously negotiates to remove such restrictions. In a very limited number of instances, a complex process for requesting an exception from the policy against research secrecy has been followed, and in the last four years a few (< 5)

exemptions have been granted. Those projects are carefully scrutinized to assure that export control laws and regulations will be followed.

Please note that the fundamental research exemption can be lost by inappropriate actions of individual researchers—actions over which the University has no control and of which it would have no knowledge. If a researcher makes a "side agreement" or has a "gentleman's understanding" that he/she will not publish the results of the research, the fundamental research principle does not apply. Such agreements can have very serious consequences for researchers—including subjecting them to the possibility of lengthy prison sentences and fines—and researchers have not been authorized to enter into such agreements.

PROBLEM AREA III: USE OF CONTROLLED EQUIPMENT.

A. Background of the Problem.

In March 2004, reports from Inspector Generals of federal agencies (particularly the Department of Commerce) that are responsible for export controls raised a new issue—whether using equipment included on export control lists was a "deemed export" of "use" technology about the equipment, even when the equipment is used in fundamental research at universities. Most universities have assumed that the use of most equipment needed to perform fundamental research is not export controlled

The IG reports, however, indicated the universities' understanding was incorrect, and the management response to the reports by the Commerce Department seemed to agree with the IG interpretation. Given the large numbers of pieces of controlled scientific equipment on university campuses and the extensive use of such equipment by foreign students, this was a troubling and unanticipated development with potentially far reaching implications.

On July 30, 2004, the Vice President for Research of MIT wrote the Commerce Department, strongly protesting this reinterpretation of export control rules, concluding that "the very nature of university research, effectively, would be nullified" and that "the proposed changes would do incalculable harm to the competitiveness of American research universities . . ." Vice Presidents or Vice Provosts for Research at 12 other leading research universities joined in the letter.

On August 13, 2004, the Commerce Department responded. The response characterized the interpretation regarding use of equipment as "long-standing". However, the response did qualify some of the broad language of the IG report, as follows:

1. The response clarified that the regulations do not regulate the use of equipment, only the transfer of information about how to use the equipment. [Thus, increased technical facility or general know-how that a foreign national obtains simply by using the equipment should not be subject to export controls.]

2. In a similar vein, the response noted that information that arises during fundamental research is not subject to the regulations. [Thus, information about how to use equipment that a foreign national develops in the course of conducting fundamental research, or that is or has been developed by others on the research

team during the current research (or during previous fundamental research), should not be subject to export controls.]

3. The response noted that only "specific information" that is "necessary" for use of the equipment would be covered, and only if technology for "use" were specifically included in the list of export controlled items and technologies.

4. The response noted that information about how to operate equipment would not be subject to export controls if that information were otherwise "publicly available"—for example, posted on the internet. [Thus, other categories of "publicly available" information also should be exempt. These include information from teaching laboratories released in association with for-credit courses, information available in a university library, and information that is available for distribution to the public or to an interested community (such as those in a scientific or engineering discipline) either for free or at a cost that does not exceed the cost of reproduction and distribution (which can include a level of profit appropriate to the distribution activity). 15 C.F.R. 734.7(a).]

On September 9, 2004, the Presidents of 22 leading research universities wrote to four senior assistants to President Bush. The University Presidents pointed out the dangers of the Commerce IG's position—creation of two classes of students, which would be antithetical to principles of openness and international competitiveness of our leading research institutions; and processing of thousands of deemed export licenses, which would create bureaucracy, delay research and lead to the loss of international students. The University Presidents pointed out that since Sept. 11, 2001, the government and universities have worked collaboratively "toward meeting legitimate national security goals without compromising the openness and strength of our research and education enterprise." The letter requested prompt intervention from these White House officials so that the revised policies would not be implemented "until their consequences have been fully assessed in substantive and sustained dialogue with the university community."

On October 13, 2004, then-National Security Advisor Condoleezza Rice responded to the university Presidents. Dr. Rice stated that the Administration shares the Presidents' perspective that the US must "promote continued U.S. leadership in fundamental research and education and the industrial innovation that flows from it", and affirmed that, "Foreign nationals play an essential role in fundamental research at universities in the United States, and such research promotes our national economic welfare as well as our national security." Dr. Rice stated that "misunderstandings persist" about the export rules and "about the potential impact of the March 2004 report issued by the Commerce Department's Inspector General," and indicated the rules had been unchanged since 1994. To help assure that all concerned are proceeding on the basis of common understandings, the Departments of State and Commerce "have been directed to establish dedicated liaisons for communications with the U.S. research communities on the subject of export controls. These liaisons will seek to ensure that the entire range of technology transfer controls relating to fundamental research are understood fully and applied effectively by United States Government contracting agencies, and the U.S. academic and research communities." Dr. Rice stated further that Commerce Department officials would respond to the university Presidents regarding the issues raised in their letter.

The specific matter of the correct interpretation of the "use technology" regulations remains unresolved. The Commerce Department has issued a 60-day notice, requesting views on how it might issue regulations concerning the issues raised by the IG. The University of Minnesota will be filing comments.

B. Use Technology for Fermenters

The commerce Department IG report, available at http://www.oig.doc.gov/oig/reports/2004/BIS-IPE-16176-03-2004.pdf, pointed out (at pp. 14-16) that technology for "use" of fermenters with a capacity of 20 liters or greater is controlled under CCL category 2E301, and that two of the universities interviewed had fermenters with capacities of 250 or 300 liters that were accessible to any university student or researcher. Category 2E301 controls for all countries in the Middle East (including Israel), most republics of the former Soviet Union (including Russia), China, India and Pakistan. Thus, the IG report cast a considerable cloud over international collaboration in university research involving larger fermenters.

However, use technology for fermenters, including industrial grade large fermenters, is already widely available. This is clear from the following:

> Encyclopedia of Bioprocess Technology: Fermentation, Biocatalysis and Bioseparation, MC Flickinger, SW Drew, Eds., John Wiley & Sons, 1999; updated in a web version, 2003, periodic web updates to follow:
>
> 1. Five volumes; 2,756 pages
> 2. 350 authors, from industry and academia, from 35 countries
> 3. "[P]resents the state-of-the-art in bioprocess technology in biotechnology, focusing on fermentation, biocatalysis and bioseparations." http://www.bti.umn.edu/mcf/ebt.html, MC Flickinger web page
> 4. "All entries include basic theory and fundamental understanding; moreover, they focus on current 'hands-on' industrial practice including relevant manufacturing technology, process and facilities engineering, and their interface with regulatory requirement worldwide." *Id*.
> 5. At least two volumes are in University of Minnesota libraries.

Presumably, any secret company techniques for using fermenters that are conveyed to a university under a non-disclosure agreement would be subject to 2E301. However, the "important generic manufacturing technologies [that] are now well developed," *id*., and that are used widely throughout academia and industry, appear to be in the public domain.

C. University of Minnesota Approaches to the Problem.

Use technology for some high technology labs (e.g., those using fermenters) has been reviewed to assure that use information is in the public domain and exempt from export controls. University purchasing is not aware of any examples of equipment vendors attempting to impose confidentiality regarding manuals or specifications for University of Minnesota research

equipment. To our best knowledge, there is no restricted use technology at the University of Minnesota.

The University follows its general export control compliance practices in dealing with use technology for equipment. There should be no contractual restrictions on publication of information the University generates about how to use equipment. Any indications that a vendor/loaner/sponsor is imposing confidentiality terms on use technology are closely scrutinized, and equipment that cannot be freely used has been rejected. Labs using high end equipment should review whether use information has been restricted. If so, lab directors should contact the Office of the General Counsel.