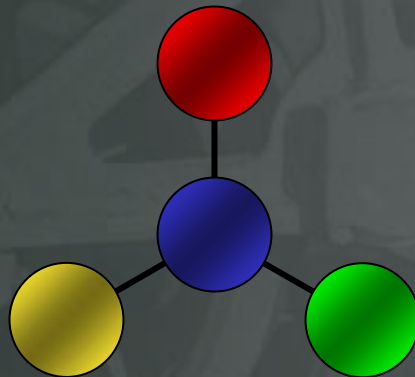


Export Controls on Nanotechnology

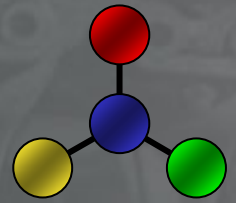
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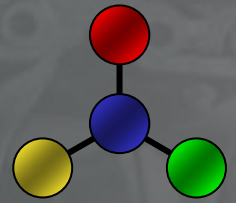
Character comes through.

Scope of Export Controls



- Exports
- Re-exports
- Deemed exports
- Foreign manufactured products incorporating U.S. controlled technology
- Overseas activities of U.S. persons
- Transactions with persons, entities, governments

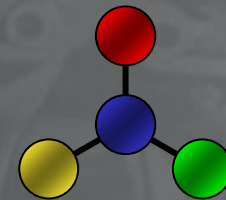
Primary Regulations



- **Export Administration Regulations (“EAR”)**
 - “Dual-Use” Goods, Software, Technology, and Services
 - Commerce Dept., Bureau of Industry and Security
- **International Traffic in Arms Regulations (“ITAR”)**
 - Military/Space Goods, Software, Technology, and Services
 - State Dept., Directorate of Defense Trade Controls
- **Foreign Assets Control Regulations (“FACR”)**
 - Embargoed and Sanctioned Countries
 - Treasury Dept., Office of Foreign Assets Control

General Nature of Items Controlled

("Items" = Commodities, Software, and Technology)



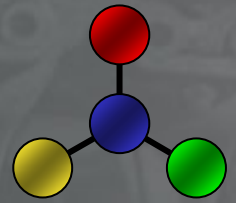
EAR CCL

- Nuclear Materials, Facilities and Equipment, and Miscellaneous
- Materials, Chemicals, Micro-organisms, and Toxins
- Materials Processing
- Electronics
- Computers
- Telecommunications and Information Security
- Optics, Sensors, and Lasers
- Navigation and Avionics
- Marine
- Propulsion Systems, Space Vehicles, and Related Equipment

ITAR USML

- Firearms, Artillery Projectors, and Ammunition
- Explosives, Propellants, Incendiary Agents, and Their Constituents
- Launch Vehicles, Guided Missiles, Ballistic Missiles, Rockets, Torpedoes, Bombs and Mines
- Vessels of War and Special Naval Equipment, Tanks and Military Vehicles
- Aircraft, Spacecraft, and Associated Equipment
- Military Training Equipment, Protective Personnel Equipment
- Military [and Space] Electronics
- Fire Control, Range Finder, Optical and Guidance, and Control Equipment
- Auxiliary Military Equipment
- Toxicological Agents and Equipment and Radiological Equipment
- Spacecraft Systems and Associated Equipment
- Nuclear Weapons Design and Test Equipment
- Classified Articles, Technical Data and Defense Services Not Otherwise Enumerated
- Submersible Vessels, Oceanographic, and Associated Equipment
- Miscellaneous Articles

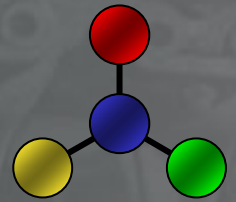
Penalties for Noncompliance



- Civil and criminal fines (\$50,000 to over \$1,000,000)
- Imprisonment
- Revocation of export licenses and privileges
- Seizure and forfeiture
- Deportation of foreign national employees
- Loss of government contracts
- Negative publicity
- Sarbanes-Oxley disclosures
- Shareholder derivative actions

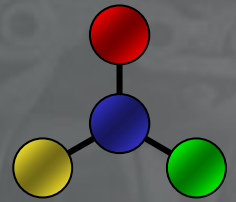
President's Export Council

Identified Criteria December 6, 2005



1. Controlled NT must have clear military significance or potential for sensitive use.
2. NT export controls must be multilateral in order to be effective.
3. Controls on NT must not place an unreasonable burden on the U.S. economy.

DoD Funding of NT



University Examples

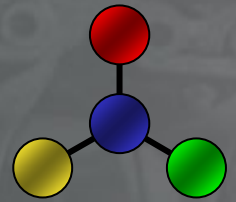
- Consortium for Nanomaterials for Aerospace Commerce and Technology (CONTACT).
 - Defense Applications: “The next generation composites and smart materials the Air Force needs to ensure U.S. air superiority in the 21st Century.”
- Massachusetts Institute of Technology Institute of Solder Nanotechnology (MIT ISD).
 - Defense Applications: “Use nanotechnology to dramatically improve the survival of soldiers. The ultimate goal is to create a 21st century battlesuit that combines high-tech capabilities with light weight and comfort.”

Private Company Example

- Lucent Technologies
 - Defense Applications: “Funding for next-generation advanced silicon circuits [for]...increased security for military applications such as transformational communications and homeland security.”



Competing Concerns



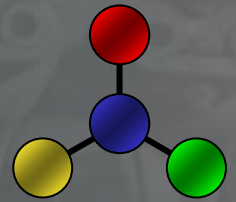
Government Concerns for Protection of Information

- Military – significantly increase precision and effectiveness
- Homeland Security – detection and identification of threats
- Economy – protection from counterfeiting
- Terrorism – bio and chemical WMD

Civilian Concerns for Free Disclosure

- Maintaining competitiveness in world markets
- Economic growth – profits, job creation
- Standard of Living – Military monopoly would cause society to forego benefits of NT and place under control of Pentagon

Implications for NT Industries



1. Appoint knowledgeable person to handle export compliance.
2. Assess control status of technology in possession.
3. Establish a written export controls and economic sanctions compliance program.
4. Conduct business in a manner that facilitates future compliance requirements should existing items become controlled or develop new items that are controlled.
5. Understand the scope of restrictions imposed under DoD funding.

MESSAGE:

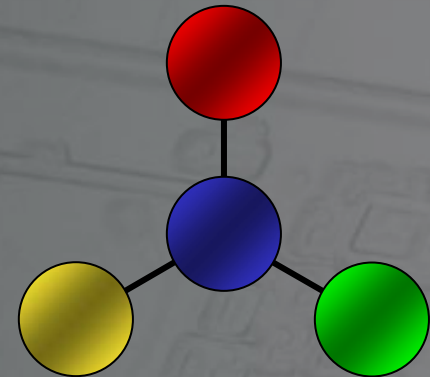
Export controls on NT will be strongly influenced by applications.

Questions?

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