




# Wassenaar Arrangement (WA)

- Purpose  
To contribute to regional and international security and stability, by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies, thus preventing destabilizing accumulations.
- The Initial Elements were originally established in 1996 and set out the purposes and scope of the Arrangement.
- There are currently 42 participating states.
- The permanent secretariat is located in Vienna, Austria.
- Visit the website – [www.wassenaar.org](http://www.wassenaar.org).

# Dual-use Selection Criteria

- Basic List Selection Criteria: Items that are major or key elements for the indigenous development, production, use or enhancement of military capabilities. Considerations are:
  - Foreign availability outside Participating States.
  - The ability to control effectively the export of the goods.
  - The ability to make a clear and objective specification of the item.
  - Controlled by another regime.
- The Sensitive & Very Sensitive Lists focus on select items from the Basic List that are considered to contribute to more advanced conventional military capabilities.






## WA Bodies & Meeting Schedule

- March/April – **Experts Group (EG)** spring meeting
- May – **General Working Group (GWG)** spring meeting
- June – **EG** intersessional technical discussions
- June – **Licensing & Enforcement Officers Meeting (LEOM)**
- September/October – **EG** fall meeting
- October – **GWG** fall meeting
- December – **Plenary** meeting



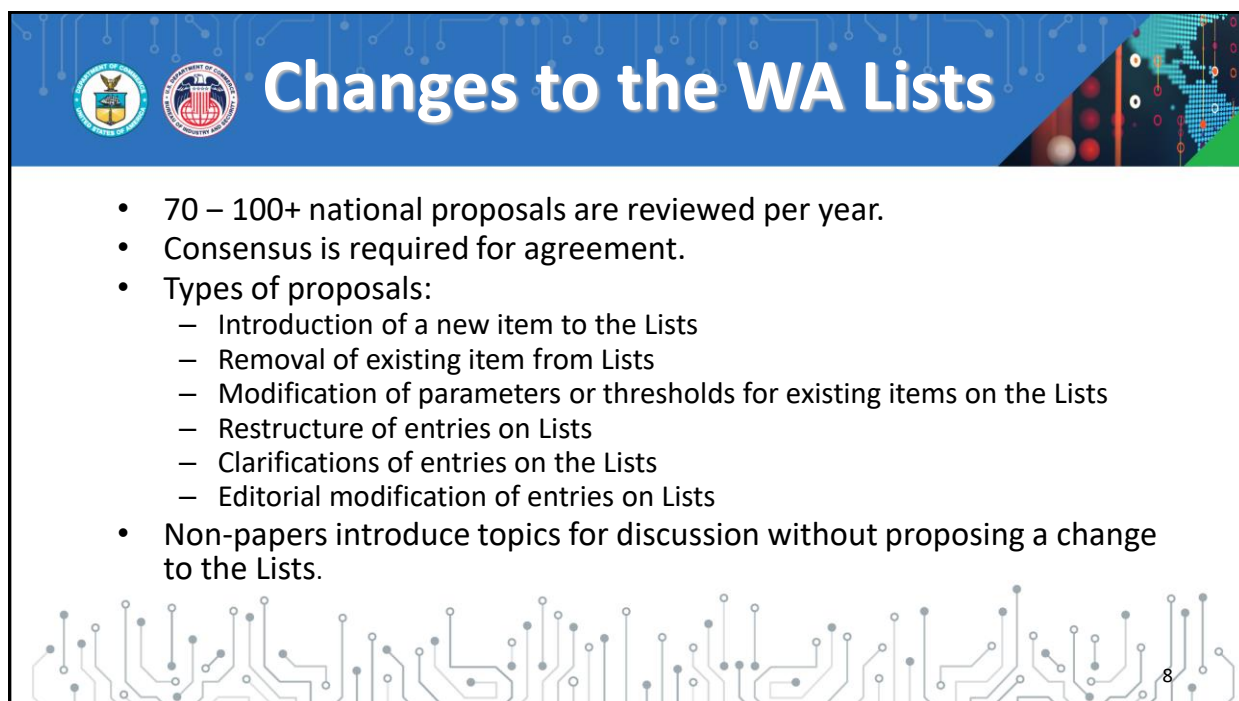
## WA Dual-use List Categories

Category 1 –	Special Materials & Related Equipment	Category 2 –	Materials Processing
Category 3 –	Electronics	Category 4 –	Computers
Category 5P1 –	Telecommunications	Category 5P2 –	Information Security
Category 6 –	Sensors & Lasers	Category 7 –	Navigation & Avionics
Category 8 –	Marine	Category 9 –	Aerospace & Propulsion



**WA Munitions List Categories**

<b>ML1 – Small caliber smooth-bore, arms &amp; automatic weapons</b>	<b>ML2 – Large caliber smooth-bore weapons &amp; armaments</b>
<b>ML3 – Ammunition &amp; fuzes</b>	<b>ML4 – Bombs, torpedoes, rockets, missiles, explosives &amp; charges</b>
<b>ML5 – Fire control &amp; warning equipment</b>	<b>ML6 – Ground vehicles</b>
<b>ML7 – Chemical, biological &amp; riot-control agents, &amp; radioactive materials</b>	<b>ML8 – Energetic materials</b>
<b>ML9 – Vessels of war</b>	<b>ML10 – Aircraft, lighter-than-air vehicles, unmanned aerial vehicles &amp; aero-engines</b>
<b>ML11 – Electronics &amp; spacecraft</b>	<b>ML12 – High-velocity kinetic energy weapon systems</b>
<b>ML13 – Armored &amp; protective equipment</b>	<b>ML14 – Military training &amp; simulators</b>
<b>ML15 – Imaging &amp; countermeasure equipment</b>	<b>ML16 – Forgings &amp; castings</b>
<b>ML17 – Miscellaneous equipment, materials &amp; libraries</b>	<b>ML18 – Production equipment</b>
<b>ML19 – Directed energy weapons</b>	<b>ML20 – Cryogenic &amp; superconductive equipment</b>
<b>ML21 – Software</b>	<b>ML22 – Technology</b>



**Changes to the WA Lists**

- 70 – 100+ national proposals are reviewed per year.
- Consensus is required for agreement.
- Types of proposals:
  - Introduction of a new item to the Lists
  - Removal of existing item from Lists
  - Modification of parameters or thresholds for existing items on the Lists
  - Restructure of entries on Lists
  - Clarifications of entries on the Lists
  - Editorial modification of entries on Lists
- Non-papers introduce topics for discussion without proposing a change to the Lists.



## Examples of 2017 WA List Changes

- Addition of explosives, EDNA & TMETN, to ML8.a.
- Addition of ReadOut Integrated Circuits (ROICs) to 6.A.2.
- Deletion of 3D image-processing robots in 2.B.7.a.
- Restructure of 2.B.6. & 2.B.8. entries for dimensional inspection or measuring systems & equipment.
- Modified parameters for high-energy primary cells in 3.A.1.e.1.a.
- Clarified the type of terrestrial telemetry & telecommand equipment for spacecraft in 9.A.4.f.
- Relocation & cleanup of definitions in Cats 1, 2, 3, 4, 6 & 7.

9



## U.S. WA Proposal Cycle



10





# How can you get involved?

- Join a Technical Advisory Committee ([tac.bis.doc.gov](http://tac.bis.doc.gov)).
  - Information Systems (ISTAC)
  - Sensors & Instrumentation (SITAC)
  - TRANSportation (TRANSTAC)
  - Materials Processing & Equipment (MPETAC)
  - Materials (MTAC)
  - Emerging Technology (ETAC)
- Monitor the Federal Register.
- Participate in industry groups.
- Attend this conference.

11

## Nuclear Suppliers Group

Keeping Controls Updated and Relevant

Presented by Steven Clagett

Director, Nuclear and Missile Technology Controls Division

Bureau of Industry and Security

# NSG Background

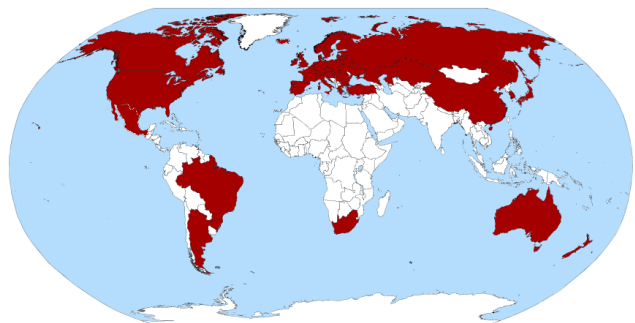
- Founded in 1974
- Group of countries that seeks to contribute to the non-proliferation of nuclear weapons through the implementation two sets of guidelines/lists
  - Nuclear transfers (Trigger List)
  - Nuclear-related dual use items
- 48 Participating Governments (PGs) that implement the guidelines through national laws and practices



13

# NSG Meetings

- **Annual plenary** – held in early summer hosted by rotating (voluntary) chair
- **Consultative Group (CG)** – meets twice a year to hold consultations on issues associated with the Guidelines on nuclear supply and its technical annexes
- **Technical Experts Group (TEG)** – meets twice a year (usually in conjunction with CG) and is responsible for keeping the control lists technically accurate and up to date



14

# Influencing Change in the NSG

Proposals to alter control lists are submitted by individual countries and must reach consensus to be adopted

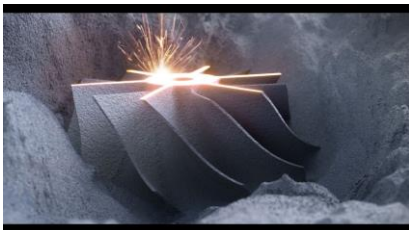
- Join Commerce Technical Advisory Committees (TACs)
- Multinational companies should consult with other branches and make Commerce aware of any differences in how the control language is interpreted/implemented
- Keep Commerce abreast of emerging technology or expanded uses of controlled items

15

## TEG Topics – Additive Manufacturing

“A New Way to do Old Things”

- Additive manufacturing (AM) – what should be controlled versus what can be controlled



- What about technology or materials?

- How do you properly define machines – ISO standards, parameters, characteristics?
- Job shops and parts by mail – is this a model for the future?

16



## TEG Topics – Machine Tools

- Machine tools have been a fixture of export controls for over 60 years. New ISO standards, growing world wide availability, and greater capabilities are forcing the NSG to determine not only what machines are “usable”, but what machines can realistically be controlled.
- Are machine tool controls as relevant in light of emerging technologies such as AM or other casting techniques?



## TEG Topics – Mass Spectrometers

- The types of mass spectrometers controlled have become much more widely used in laboratories throughout the world
- In 2017, the U.S. exported hundreds of 3A233 mass spectrometers all for civil end uses.
- The TEG is looking into whether the controls need updating



## Future TEG Topics – Carbon Fiber?

- Carbon fiber was once the exotic material of aerospace, rocket motor cases, and centrifuge rotors. Now many of these early fibers/grades are obsolete with newer and better grades commonly used in sporting good and automobile applications.
- Given that these materials continue to have strategic applications, should the growing world wide availability and ever increasing civil and consumer uses force the NSG to look for innovative ways to address these concerns?



19



## Australia Group Control Lists

Adjusting to Novel Applications and Emerging Technologies

Wesley Johnson, PhD  
Microbiologist  
Chemical and Biological Controls  
Bureau of Industry and Security



## Australia Group

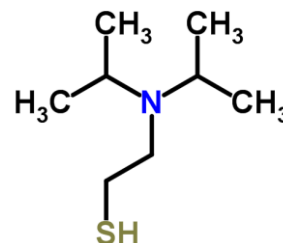
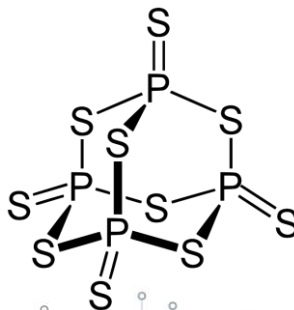
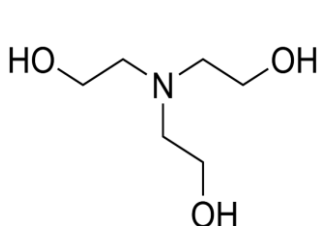
- 42 member states and the European Union
- Like-minded approach to prevent proliferation of chemical and biological weapons
- Common Control Lists
- “No undercut” policy on denials

21



## Common Control Lists

Chemical Weapons Precursors (related technology) –  
ECCNs 1C350, 1C355, 1C995 (1E001, 1E351, 1E355)

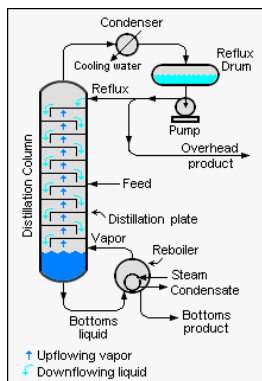


22



## Common Control Lists

**Dual-use chemical manufacturing facilities and equipment (related technology and software) – ECCNs 2B350, 2B351, 1A004 (2D351, 2E001, 2E002, 2E301, 2E351, 1D390, 1E350)**



## Common Control Lists

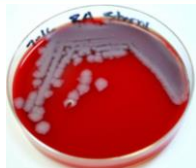
**Dual-use biological equipment (related technology and software) – ECCN 2B352 (2E001, 2E002, 2E301, 2E321)**



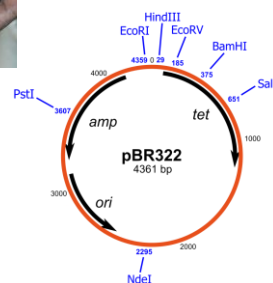
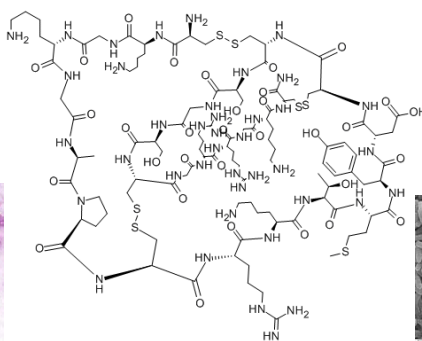
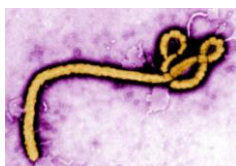




## Common Control Lists



**Human and Animal Pathogens and Toxins (related technology) – ECCNs 1C351, 1C353 (1E001, 1E351)**

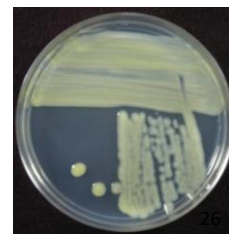
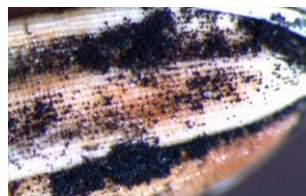


25



## Common Control Lists

**Plant pathogens (related technology) – ECCN 1C354 (1E001, 1E351)**





## Australia Group meetings

- **Plenary meeting every June**
  - Implementation meeting (control list changes)
  - Information exchange
  - Enforcement exchange (case studies)
- **Intersessional meeting most years (Dec-Mar)**
  - Implementation meeting (control list changes)
  - New and Evolving Technology Technical Experts Meeting (NETTEM)

27



## Process

- Identify items to be added, deleted, or edited
- Discuss implications of changes for individual member states and industry (Virtual Working Groups)
- Changes must have consensus
- 30 day silence procedure for adoption
- Publication in regulations of member states

28





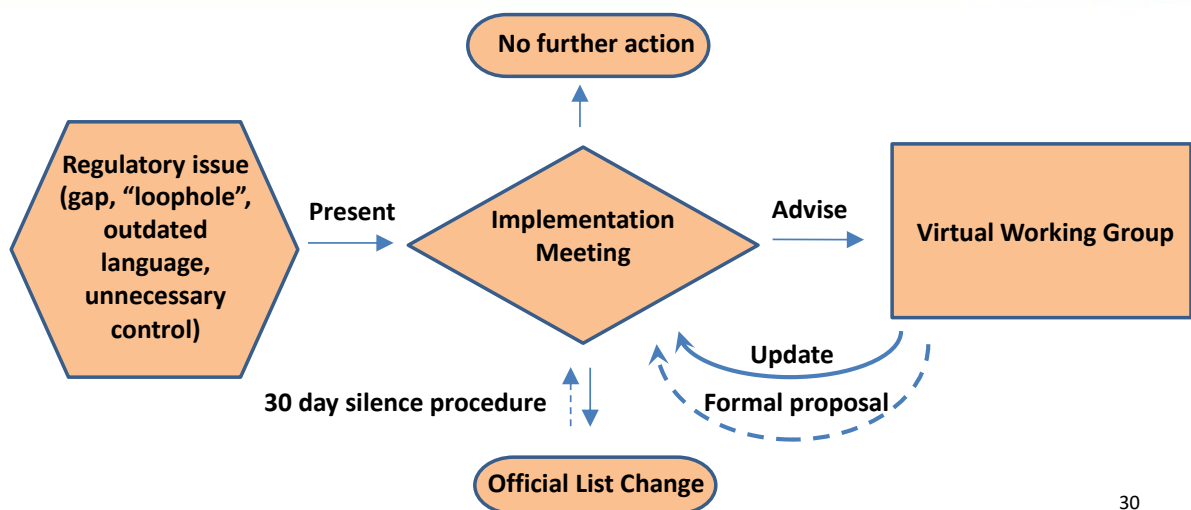
## Identifying Issues

- Control List reviews
- Novel applications or improvements for existing items
- New technologies or commodities
- Unusual classification or licensing cases
- Interpretation surveys by AG members

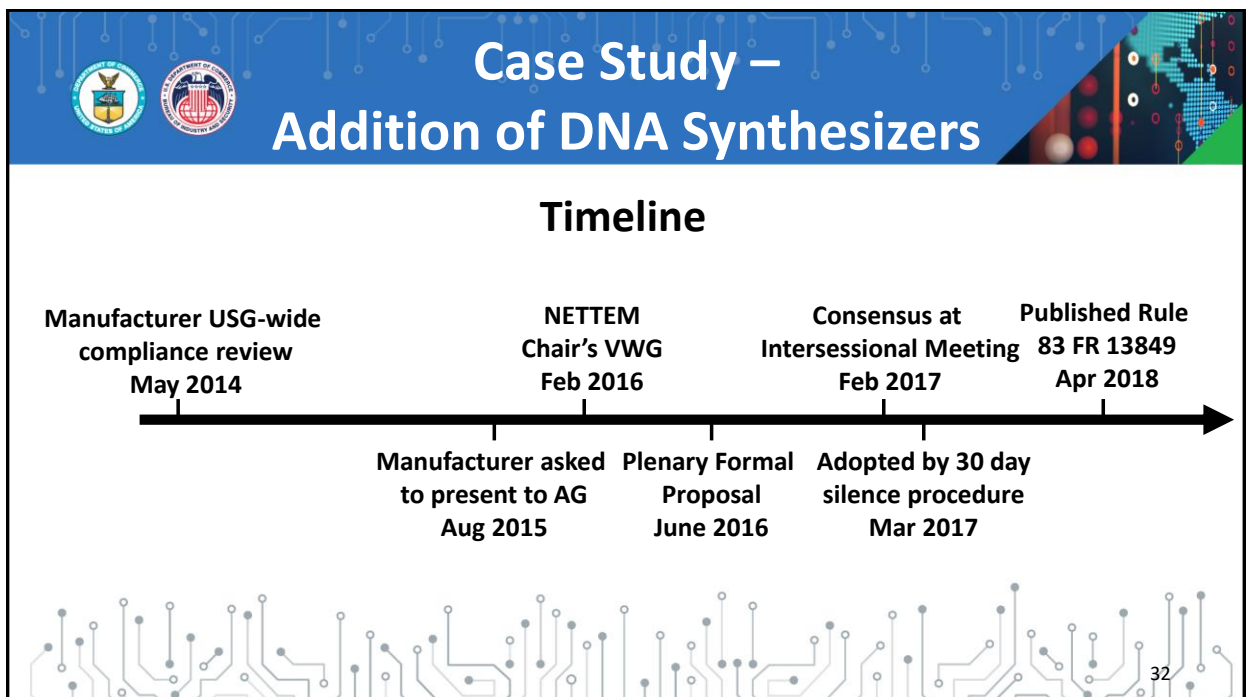
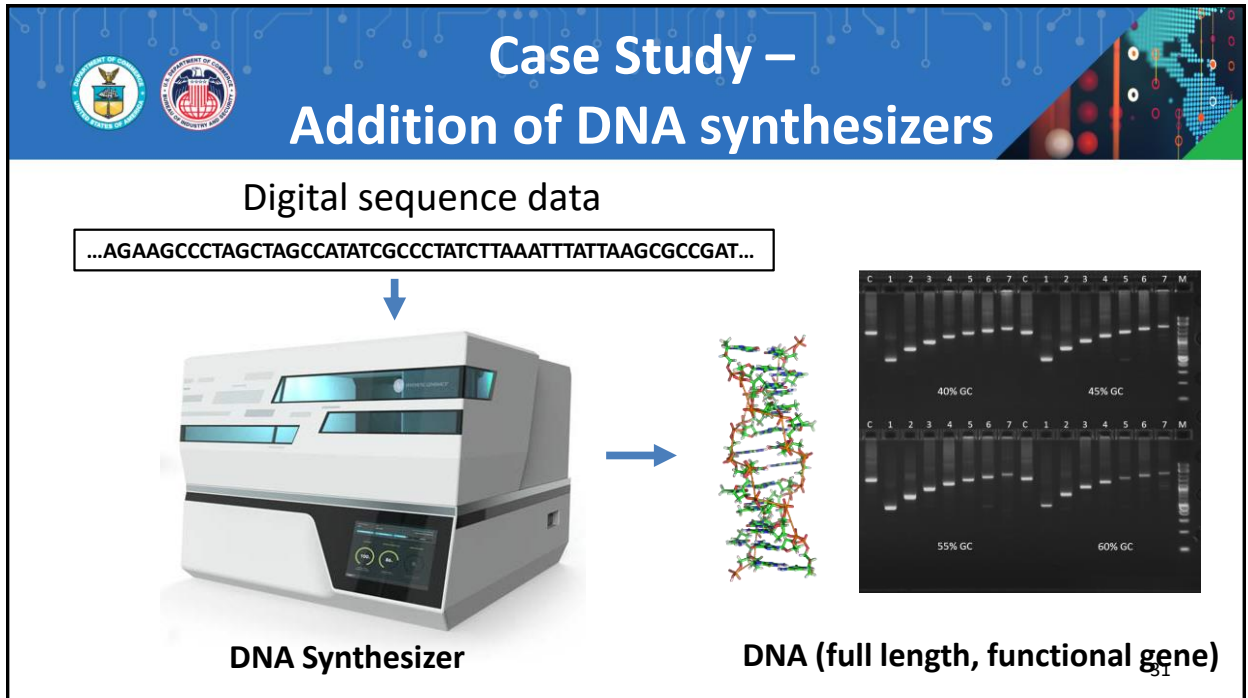
29



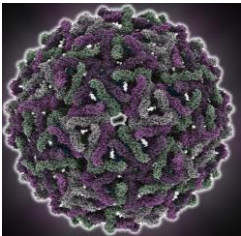
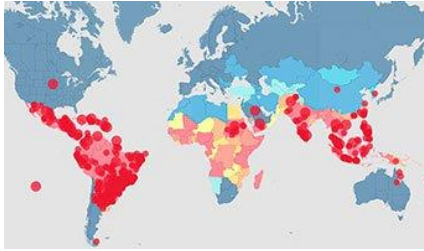
## Typical Process for List Changes





30

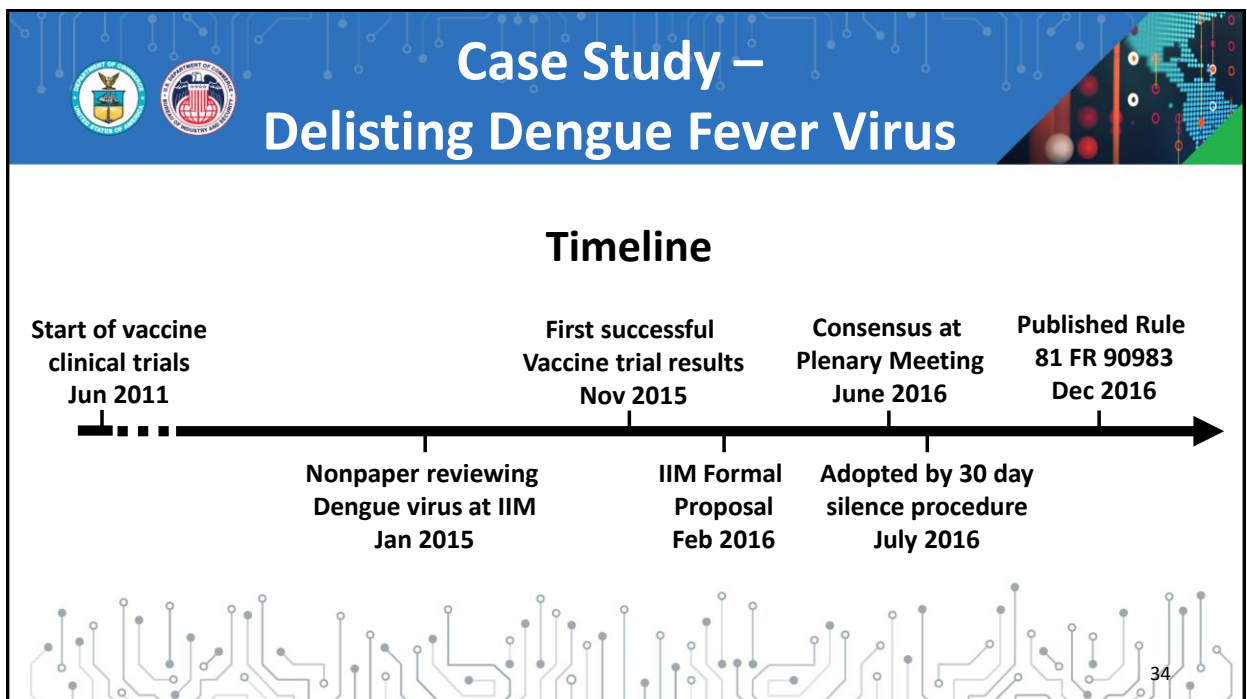


## Case Study – Delisting Dengue Fever Virus

33





## How/When Can Exporters Influence AG Rules?

- Once the AG has reached consensus, it is generally too late
- Join the Materials Technical Advisory Committee (MTAC)
- Communicate with BIS regarding new and emerging technologies
- Coordinate with other exporters through industry groups
- Be proactive in reviewing your products and technologies
- Respond to Department of Commerce Inquiries and surveys

35



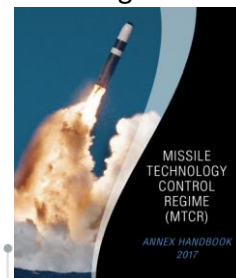
## Missile Technology Control Regime

Presented by Sharon Bragonje  
Engineer, Nuclear and Missile Technology Division  
Bureau of Industry and Security



# MTCR Background

- Founded in 1987 (informal political understanding)
- Goal of the MTCR is to limit the risks of proliferation of weapons of mass destruction (i.e. nuclear, chemical and biological weapons), by controlling transfers that could make a contribution to delivery systems (other than manned aircraft) for such weapons.
- 35 Partner countries that implement the guidelines through national legislation and practices
  - Export controls based on Equipment, Software, and Technology Annex
- U.S. publishes a Handbook for the Annex ([mtcr.info](http://mtcr.info))



37



# MTCR Meetings

- **Annual plenary** – typically held in the fall and hosted by rotating (voluntary) chair
  - A Licensing & Enforcement Experts Meeting (LEEM) and Information Exchange (IE) held with the plenary
- **Technical Experts Meeting (TEM)**
  - Meets twice a year, once in conjunction with the plenary, and once intersessionally
  - Responsible for making updates to the Annex



38





# Influencing Change in the MTCR

Proposals to alter Annex are submitted by individual countries and must reach consensus to be adopted

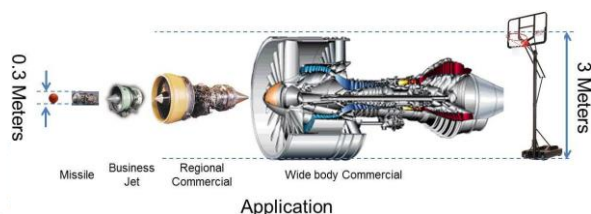
- Join Commerce Technical Advisory Committees (TACs)
- Multinational companies should consult with other branches and make Commerce aware of any differences in how the control language is interpreted/implemented
- Keep Commerce abreast of emerging technology or expanded uses of controlled items

39



## Recent Updates – Turbojet and Turbofan Engines

- 2006 changes removed the terms “small” and “lightweight” from the control on turbojet and turbofan engines (9A101), effectively removing the upper limit on controls for pre-civil certified engines
- Topic was brought up in Transportation Technical Advisory Committee (TransTAC)
- U.S. submitted a proposal limiting the control to engines with a dry weight less than 750 kg and first stage rotor diameter less than 1 meter - agreed to at the 2017 intersessional TEM



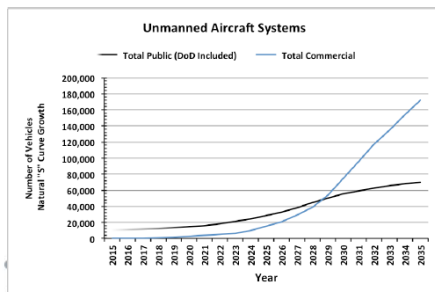
40





## TEM Topics – Unmanned Aerial Vehicles (UAVs)

- Unmanned Aerial Vehicles (UAVs) are ready to assume many of the roles that were formerly done by a manned aircraft at a much lower cost and at less risk to the operators
- Industry studies indicate UAS expenditures will more than double over the next decade, with commercial development outpacing military

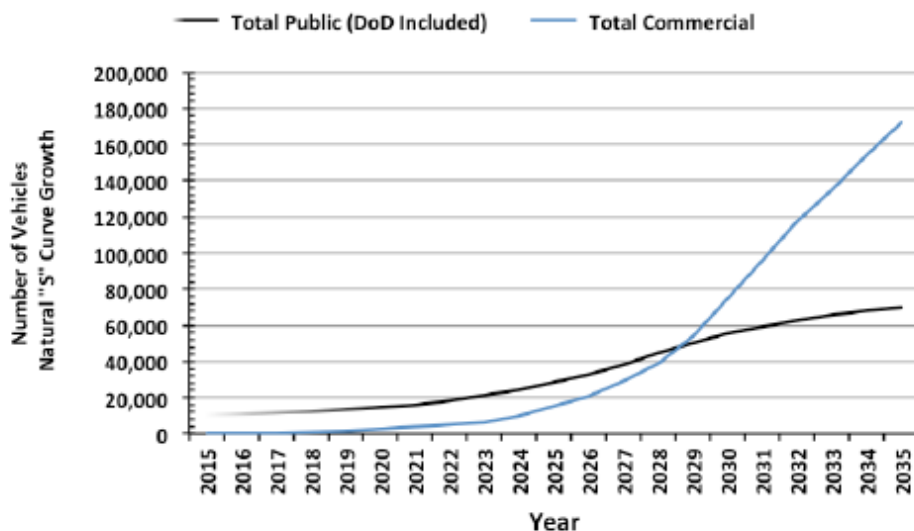


- The U.S. is pursuing modifications to the MTCR Annex to remove the strong presumption of denial on a subset of UAVs based on their inability to travel above a certain speed

41



### Unmanned Aircraft Systems



42