

Export Controls and Dual-Use Research

Dual-use research is research that is used to produce new knowledge that could easily be misused in harmful ways. Dual-use items cover both technology and software and can include items that could be used for the design, development, production or use of nuclear, chemical or biological weapons or their means of delivery, as well as technologies that can monitor individuals or be used in surveillance etc.

Dual-use items can be subject to export controls. As a researcher, you have a responsibility to consider whether your research activities could be subject to export controls. The EU regulation [EC-No 428/2009](#) provides details in relation to the control of exports of dual-use items. The [Irish Export Licensing Unit](#) of the Department of Enterprise Trade and Employment (DETE) are nationally responsible for administering and enforcing the Export Control laws in Ireland and can provide clarity regarding whether particular research activities will be subjected to export control laws. They can also provide guidance and support in relation to obtaining export licenses for dual-use research. In addition, Appendices 1 and 2 below give details of specific areas and scenarios that may be of relevance.

If you are working with protected goods, sensitive information, genetic materials, biological or chemical substances with proven or implied dual-use, areas of potential transgression include:

- a. Travelling overseas to conduct research - Taking either research equipment or sensitive information overseas could be subject to export controls. This includes business plans or technologies that potentially pose a risk to national security.
- b. Travelling overseas with computers and other electronic devices - When researchers take their computer or other electronic devices with them on a trip overseas, they need to make sure they are aware of any software or information carried on these devices that might pose a risk to national security. Also be aware that sending emails abroad could be viewed as 'exporting' information.
- c. Hosting foreign visitors - If researchers host visitors from countries that pose security risks to the Republic of Ireland or the European Union, they must make sure they do not share information with them that is judged to pose a risk to national security or the security of the Union.
- d. Working as an overseas consultant - Researchers will be subject to export control regulations if they provide expertise as an overseas consultant to countries or individuals that are judged to pose a risk to the national security of the Republic of Ireland or to the security of the European Union.
- e. Employing foreign nationals as part of their research team - Students/colleagues returning to their country of origin will often 'export' what they have learned. Sometimes, they may export materials/equipment. In view of this, they may have to be excluded from some research projects or denied associated information.
- f. Shipping biological materials - International or national regulations and research agreements place restrictions on exporting and importing biological materials. Before sending or receiving any biological materials, researchers must make sure they are in compliance with all related regulations (e.g. the [Nagoya Protocol](#)).

Export Control and Dual Use research is a new and evolving area. Researchers can access the [Epigeum Export Controls course](#) through Loop, the institutional virtual learning environment (VLE), to learn more about Dual Use research and Export Control laws. If you are unsure as to whether your activities could be subject to Export Controls or have queries regarding this area, please contact the [Office of the DCU Chief Operations Officer](#) for assistance.

Appendix 1: Research areas that are more likely to be impacted by dual-use export controls

The following research areas are more likely to be impacted by dual-use export controls than other research disciplines. Please note that this list is non-exhaustive and may serve as (non-binding) tool to more easily identify relevant research. In this Appendix, the dual-use descriptors (right column) are rather general in nature. Specific export controls comprising sharp technical parameters are summarized in the Annex I to the EU dual-use Regulation, which should be consulted primarily.

Research areas	Dual-use descriptors
Biology and (nano)biotechnology	Human, plant and animal pathogens Toxins Biological protection, containment and handling equipment
Chemistry Advanced material science	Chemicals, polymers, lubricants and fuel additives Chemical manufacturing facilities, equipment and components such as pumps, heat exchangers, valves and distillation columns Chemical protection, containment and handling equipment
Nuclear physics and engineering	Nuclear reactors and specially designed or prepared equipment and components Nuclear material
Energy and environmental technology	Optical and acoustic sensors Cameras
Computer science and engineering Information and communications technology	Source code for some listed acoustic data processing Digital ruggedized computers Intrusion software related items Telecommunications systems, equipment, components and accessories (including interception and jamming) Information security hardware, software and technology (including encryption and cryptanalysis)
Avionics and aerospace engineering and design	Accelerometers Gyroscopes Navigation (receiving) systems Drones Launch platforms Satellites Aero gas turbine engines Ramjet, scramjet or combined cycle engines
Semiconductor	Integrated circuits Semiconductor manufacturing, testing or inspection equipment Wafer substrates (Computer-aided-design) software for semiconductors
Optical engineering	Lasers Optical sensors Imaging cameras
Robotics and process automation	Machine tools Robots, end-effectors and remotely controlled articulated manipulators Dimensional inspection systems
Additive manufacturing (3D printing)	Feedstock materials Manufacturing equipment
Quantum technologies	Quantum cryptography
Artificial intelligence and machine learning	Neural network integrated circuits Neural computers Electronic components
Naval technologies	Surface vessels Underwater vessels Underwater vision systems Power transmission and generation systems
Cyber-surveillance items	Mobile telecommunications interception equipment Internet surveillance systems Tools for the generation, command and control, or delivery of intrusion software Law enforcement monitoring software Digital forensic/investigative tools

Appendix 2: Research scenarios of where export controls may come into place

The following are scenarios where dual-use export controls may come into place. The list is non-exhaustive.

Scenario	What does the EU dual-use Regulation say?	To be considered as well
Teaching, consulting, collaborating or working on research involving dual-use items <u>inside customs territory of the Union</u> with visiting third country researchers	<ul style="list-style-type: none"> — The EU dual-use Regulation does not foresee controls for non-EU persons accessing dual-use items inside the customs territory of the Union. Hence, no licence is needed as long as the controlled dual-use items remain inside the customs territory of the Union. When the visiting third country researcher returns home with access to (or in possession of) the controlled dual-use item, then a licence is needed. 	<ul style="list-style-type: none"> — In some cases, based on national provisions, a technical assistance licence is required or the supply of technical assistance is prohibited. — A licence may be required in case a sanctioned entity or a natural/legal person of a sanctioned country seeks cooperation inside the EU. In some cases such cooperation is prohibited according to EU sanctions.
Teaching, consulting, collaborating or working on research involving dual-use items <u>outside customs territory of the Union</u>	<ul style="list-style-type: none"> — The EU dual-use Regulation does not foresee controls for EU persons engaged outside the customs territory of the Union in research involving dual-use items. Hence, no licence is needed in principle <i>if there is no access to controlled dual-use items from within the customs territory of the Union.</i> 	<ul style="list-style-type: none"> — In some cases, based on national provisions, a technical assistance licence is required or the supply of technical assistance is prohibited. — A licence may be required in case a sanctioned entity or natural/legal person of a sanctioned country seeks cooperation inside the EU. In some cases such cooperation is prohibited according to EU sanctions.
Organising inside customs territory of the Union a (virtual) conference/meeting/seminar/... or presenting at a (virtual) conference/meeting/seminar/... on research involving dual-use items	<ul style="list-style-type: none"> — The EU dual-use Regulation does not foresee controls for non-EU persons accessing dual-use items inside the customs territory of the Union. Hence, no licence is needed <i>if the controlled dual-use items remain inside the customs territory of the Union.</i> When the visiting third country researcher returns home with access to (or in possession of) the controlled dual-use item, then a licence is needed. — If the conference/meeting/seminar is virtual and transmitted to a destination outside of the EU, then a license is needed for that part of the research that involves controlled dual-use items. 	<ul style="list-style-type: none"> — In some national cases, a technical assistance licence is required — It is a good compliance practice to warn participants of licence requirements when exiting the customs territory of the Union with the controlled item(s). — A licence may be required in case a sanctioned entity or natural/legal person of a sanctioned destination seeks cooperation inside the customs territory of the Union. In some cases such cooperation is prohibited according to EU sanctions.
Organising outside customs territory of the Union a (virtual) conference/meeting/seminar/... or presenting at a (virtual) conference/meeting/seminar/... on research involving dual-use items	<ul style="list-style-type: none"> — The EU dual-use regulation does not foresee controls for EU persons engaged outside the customs territory of the Union in research involving dual-use items. Hence, no licence is needed in principle <ul style="list-style-type: none"> — <i>if orally presented, even when recorded on the spot, as long as there is no access to controlled dual-use items from within the customs territory of the Union.</i> 	<ul style="list-style-type: none"> — In some cases, based on national provisions, a technical assistance licence is required or the supply of technical assistance is prohibited. — A licence may be required in case a sanctioned entity or a natural/legal person of a sanctioned country seeks cooperation inside the EU. In some cases such cooperation is prohibited according to EU sanctions

	<ul style="list-style-type: none"> — if accompanied by presentation or other conference material where the information is not meeting the controlled technology threshold(s). — The EU dual-use regulation requires a licence, <ul style="list-style-type: none"> — if there is access to controlled dual-use items from within the customs territory of the Union. — if accompanied by presentation or other conference material (carried in paper, on laptop or other physical carrier such as USB stick) that contains controlled dual-use technology. 	
Publishing listed dual-use technology	<ul style="list-style-type: none"> — A publication including technology that meets the thresholds for dual-use control needs an export authorisation. The intention to publish (and thus the act of publishing) is not enough to be considered to be in the public domain and is therefore not exempted from control. The export control authorities rely on the due diligence of research organisation to screen prepublications in sensitive research areas. — In case a (draft) publication (or raw data) meets the thresholds for containing export controlled dual-use technology it is subject to export controls. This applies to both the pre-publication phase and to the actual publication phase. In principle, this can also apply to Master or PhD thesis that meet the controlled technology threshold(s). 	The researcher or research organisation could consider to amend or omit the specific parts that contain the controlled technology or restrict the access to these specific parts. If mitigation is not feasible the researcher or research organisation should contact the competent authority how to fulfil the licence requirement (e.g. individual licence application).
Patented information and information for patent application	<ul style="list-style-type: none"> — No licence is needed in principle, as the export of patented information that is fully disclosed on the public record is considered to be “in the public domain” and hence exempted from export controls. — No licence is needed for the export of the minimum necessary information for patent applications. 	
Export of tangible dual-use items (goods), including prototype design and second-hand lab equipment	<ul style="list-style-type: none"> — Research organisations may (re)sell, donate or lend dual-use items or temporarily export them for their own research projects. Regardless whether the items are new, a prototype or second-hand, they require a licence for export if listed in Annex I and for intra-EU transfers if listed in Annex IV of the EU dual-use Regulation. 	