

# The Big Table and the Trade Flow tools



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# Outline

- **The Big Table tool**
  - Search tool on a document collection on IAEA safeguards and export controls
  - Distributed to licensing and customs authorities in the EU
- **Trade Flows tool** (under development)
  - Estimation of EXTRA EU flows of dual-use items
  - Context of use is the design of EU policies for export controls



# The Big Table\* (TBT)

- A tool to search a collection of **reference documents for export controls**.
- Reference documents include:
  - regulatory documents
  - technical handbooks
  - the Harmonized System
- The document collection is stored in **database** format and as **PDF** files.
- The document collection is **searched either by text or by correspondence tables**.
- Correspondence tables present equivalent or related items together.

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\*Source code registered in JRC software catalogue, Nr. 2883.



# Document collection

It includes:

- **'Regimes' specific documents**, currently:
  - Nuclear-related (Nuclear Suppliers Group + others)
  - Missile Technology Control Regime
  - Australia Group lists
- **Cross-cutting documents**, currently:
  - EC Reg 428/2009
  - EC Reg 388/2012\*
  - Harmonized System 2002, 2012\*
  - Combined Nomenclature 2012\*

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\*Document recently added to TBT. At present not fully connected to the other documents in the collection .



# Document collection

## CROSS-CUTTING DOCUMENTS

EU Regulation on Dual-Use

----- latest\*

Harmonized System by WCO

----- latest\*

EU Combined Nomenclature\*

Document	Access	Nr. DB records
<b>EC Reg 428/2009</b> Annex I (2009)	Public	2231
<b>EC Reg 388/2012</b> Annex I (2012)	Public	2289
<b>Harmonized System</b> (2002)	Public	6258
<b>Harmonized System</b> (2012)	Public	6261
<b>Combined Nomenclature</b> (2012)	Public	12240

\*Document recently added to TBT. At present not fully connected to the other documents in the collection .



# Document collection

## **NUCLEAR** **(Ref. NUCLEAR SUPPLIERS GROUP)**

Additional Protocol

----- handbook

Nuclear Suppliers Group 'Trigger List'

----- handbook

Nuclear Suppliers Group 'Dual-Use List'

----- handbook

Goods Review List

----- handbook

EU Restrictive Measures against Iran

EU Restrictive Measures against DPRK

Document	Access	Nr. DB records
<b>INFCIRC 540c</b> Annexes I, II (1997)	Public	154
<b>INFCIRC 540 HB</b> Annex II (2004)	IAEA	137
<b>INFCIRC 254 1</b> rev10 (2011)	Public	158
<b>INFCIRC 254 1 HB</b> (2002)	NSG	148
<b>INFCIRC 254 2</b> rev8 (2010)	Public	229
<b>INFCIRC 254 2 HB</b> (2003)	NSG	229
<b>GRL</b> Annex 3 (2002)	Public	415
<b>GRL HB</b> Annex 3 (1998)	IAEA	391
<b>EC Reg 961/2010</b> Annexes II, IV (2010)	Public	81
<b>EC Reg 567/2010</b> Annex I (2010)	Public	83



# Document collection

<b>MISSILE (Ref. MISSILE TECHNOLOGY CONTROL REGIME)</b>		<b>Document</b>	<b>Access</b>	<b>Nr. DB records</b>
Missile Technology Control Regime		<b>MTCR</b> Annex (2011)	Public	399
----- handbook		<b>MTCR HB</b> (2010)	Public	398



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## Animal pathogens

Document	Access	Nr. DB records
AG CWP (2009)	Public	63
AG CWP HB (2005)	AG	63
AG DU CHEM (2011)	Public	98
AG DU CHEM HB (2007)	AG	92
AG DU BIO (2009)	Public	18
AG DU BIO HB (2010)	AG	16
AG BIO AGE (2011)	Public	86
AG PLANT PAT (2011)	Public	19
AG ANIMAL PAT (2011)	Public	24





# Correspondence tables

Aim:

- To create correspondences **within a group of 'Regimes' specific documents.**
- To create correspondences **between 'Regimes' specific documents and cross-cutting documents.**

Approach:

- Experts create correspondence tables between *some* pairs of documents  
→ **Native correspondences**
- Native correspondences are joined to derive correspondences between new pairs of documents  
→ **Derived correspondences**



# All correspondence tables –

## Nov. 2012

Closest Regime	Area	From	EC Reg 428/2009	EC Reg 388/2012	Harmonized System 2002	Harmonized System 2012	Combined Nomenclature 2012	INFCIRC 540c	INFCIRC 540 HB	INFCIRC 254 1	INFCIRC 254 1 HB	INFCIRC 254 2	INFCIRC 254 2 HB	GRL	GRL HB	EC Reg 961/2010	EC Reg 567/2010	MTCR	MTCR HB	AG CWP	AG CWP HB	AG DU CHEM	AG DU CHEM HB	AG DU BIO	AG DU BIO HB	AG BIO AGE	AG PLANT PAT	AG ANIMAL PAT
All	General	EC Reg 428/2009						*	*		*	*	*	*	*													
		EC Reg 388/2012																										
		Harmonized System 2002						*	*	*	*	*	*	*	*			*	*	*	*	*	*	*	*	*	*	*
		Harmonized System 2012																										
		Combined Nomenclature 2012																										
NSG	Nuclear	INFCIRC 540c	*		*			*	*	*	*	*	*	*	*													
		INFCIRC 540 HB	*		*			*	*	*	*	*	*	*	*													
		INFCIRC 254 1	*		*			*	*	*	*	*	*	*	*													
		INFCIRC 254 1 HB	*		*			*	*	*	*	*	*	*	*													
		INFCIRC 254 2	*		*			*	*	*	*	*	*	*	*													
		INFCIRC 254 2 HB	*		*			*	*	*	*	*	*	*	*													
		GRL	*		*			*	*	*	*	*	*	*	*													
		GRL HB	*		*			*	*	*	*	*	*	*	*													
		EC Reg 961/2010	*		*			*	*	*	*	*	*	*	*													
MTCR	Missile	EC Reg 567/2010	*		*			*	*	*	*	*	*	*	*													
		MTCR	*		*			*	*	*	*	*	*	*	*													
AG	Chemical	MTCR HB	*		*			*	*	*	*	*	*	*	*													
		AG CWP	*		*			*	*	*	*	*	*	*	*													
		AG CWP HB	*		*			*	*	*	*	*	*	*	*													
		AG DU CHEM	*		*			*	*	*	*	*	*	*	*													
		AG DU CHEM HB	*		*			*	*	*	*	*	*	*	*													
	Biological	AG DU BIO	*		*			*	*	*	*	*	*	*	*													
		AG DU BIO HB	*		*			*	*	*	*	*	*	*	*													
		AG BIO AGE	*		*			*	*	*	*	*	*	*	*													
		AG PLANT PAT	*		*			*	*	*	*	*	*	*	*													
		AG ANIMAL PAT	*		*			*	*	*	*	*	*	*	*													

**Origin of the correspondence**

- Native
- Derived

**Closest Regime**

- All
- NSG
- MTCR
- AG



# Searching by text

## Example

- Search the document collection for Titles containing 'nuclear' and 'graphite'
- Matching records:

Document	Code	Title
ECReg_428_AnnexI_2009	0C004	<u>Graphite</u> , <u>nuclear</u> grade, having a purity level of less than 5 parts per million 'boron equivalent' and with a density greater than 1,5 g/cm <sup>3</sup> .
GRL_Annex3_2002	49.12.	<u>Nuclear</u> grade <u>graphite</u>
GRL_Annex3_HB_1998	21.	<u>Nuclear</u> grade <u>graphite</u>
INFCIRC_254_1_HB_2002	B.2.2.	<u>Nuclear</u> grade <u>graphite</u>
INFCIRC_254_1_rev10_2011	B.2.2.	<u>Nuclear</u> grade <u>graphite</u>
INFCIRC_540_AnnexII_HB_2004	2.2.	<u>Nuclear</u> grade <u>graphite</u>
INFCIRC_540c_1997	2.2.	<u>Nuclear</u> grade <u>graphite</u>
INFCIRC_540c_1997	x.	The manufacture of <u>nuclear</u> grade <u>graphite</u> .



# Searching by correspondences

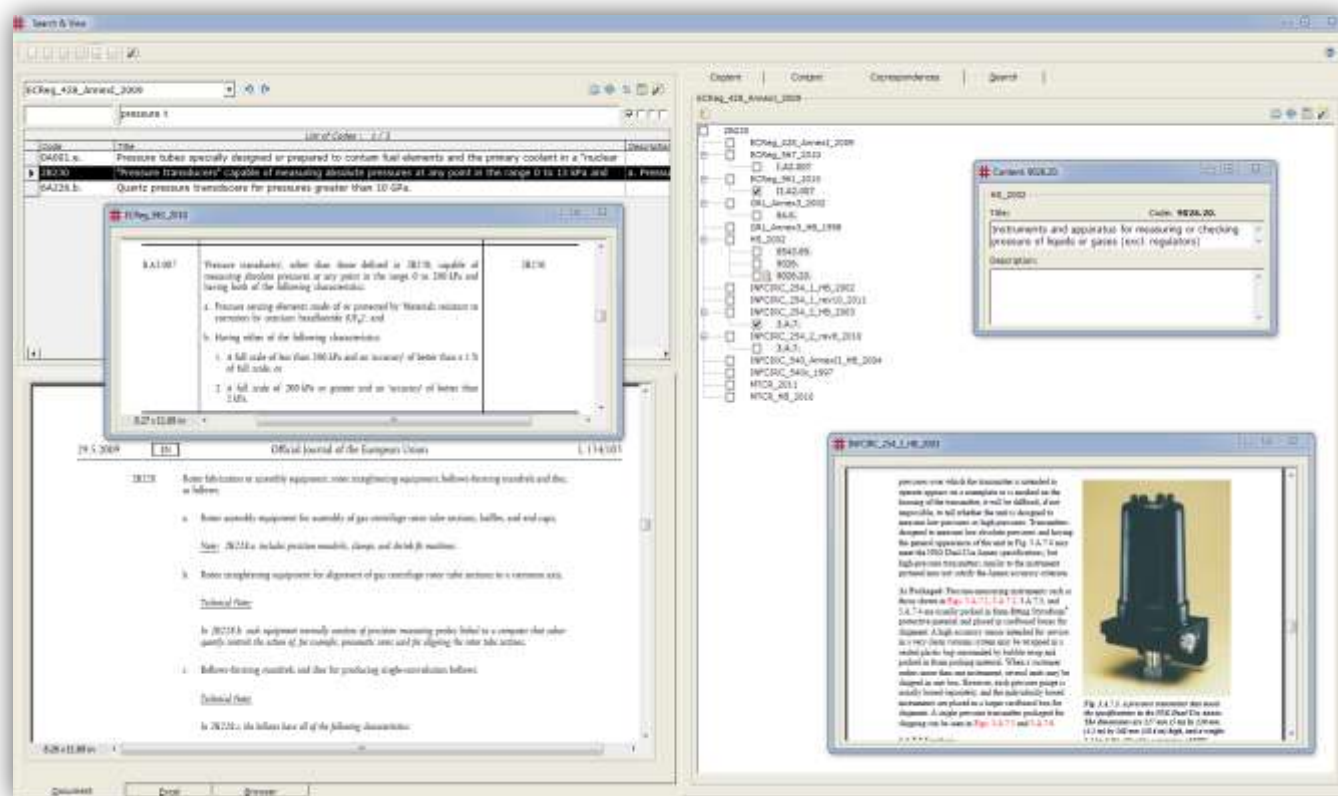
## Example

- Items related to nuclear grade graphite 0C004 EReg\_428\_AnnexI\_2009:

Document	Code	Title
EReg_567_2010	I.A1.020	<a href="#">Graphite</a> , other than that specified in 0C004 or 1C107.a., designed or specified for use in Electrical Discharge Machining (EDM) machines.
GRL_Annex3_2002	49.12.	<a href="#">Nuclear</a> grade <a href="#">graphite</a>
HS_2002	3801.10.	Artificial <a href="#">graphite</a> (excl. retort graphite, retort carbon and goods of artificial graphite, incl. refractory materials based on artificial graphite)
HS_2002	3801.90.	Preparations based on <a href="#">graphite</a> or other carbon in the form of pastes, blocks, plates or other semi-manufactures (excl. carbonaceous pastes for electrodes and similar pastes for furnace linings)
HS_2002	8401.40.	Parts of <a href="#">nuclear</a> reactors, n.e.s. [Euratom]
INFCIRC_254_1_HB_2002	B.2.2.	<a href="#">Nuclear</a> grade <a href="#">graphite</a>
INFCIRC_254_1_rev10_2011	B.2.2.	<a href="#">Nuclear</a> grade <a href="#">graphite</a>
INFCIRC_540_AnnexII_HB_2004	2.2.	<a href="#">Nuclear</a> grade <a href="#">graphite</a>
INFCIRC_540c_1997	2.2.	<a href="#">Nuclear</a> grade <a href="#">graphite</a>



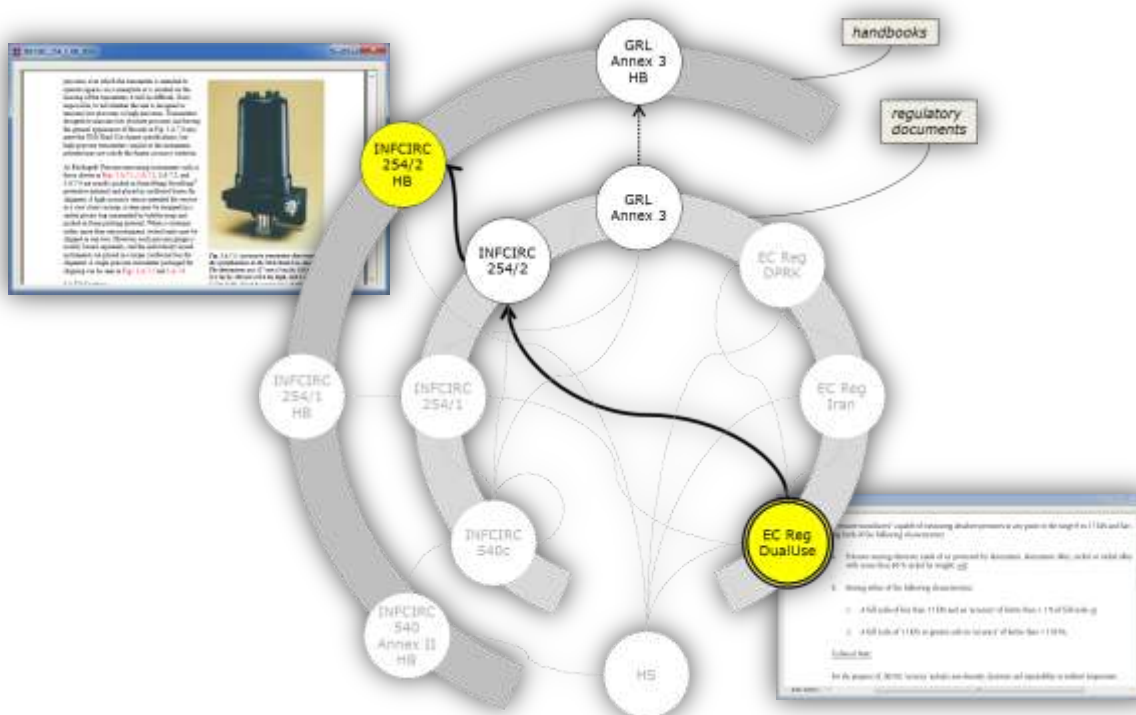
# TBT search interface





# Possible uses of TBT –

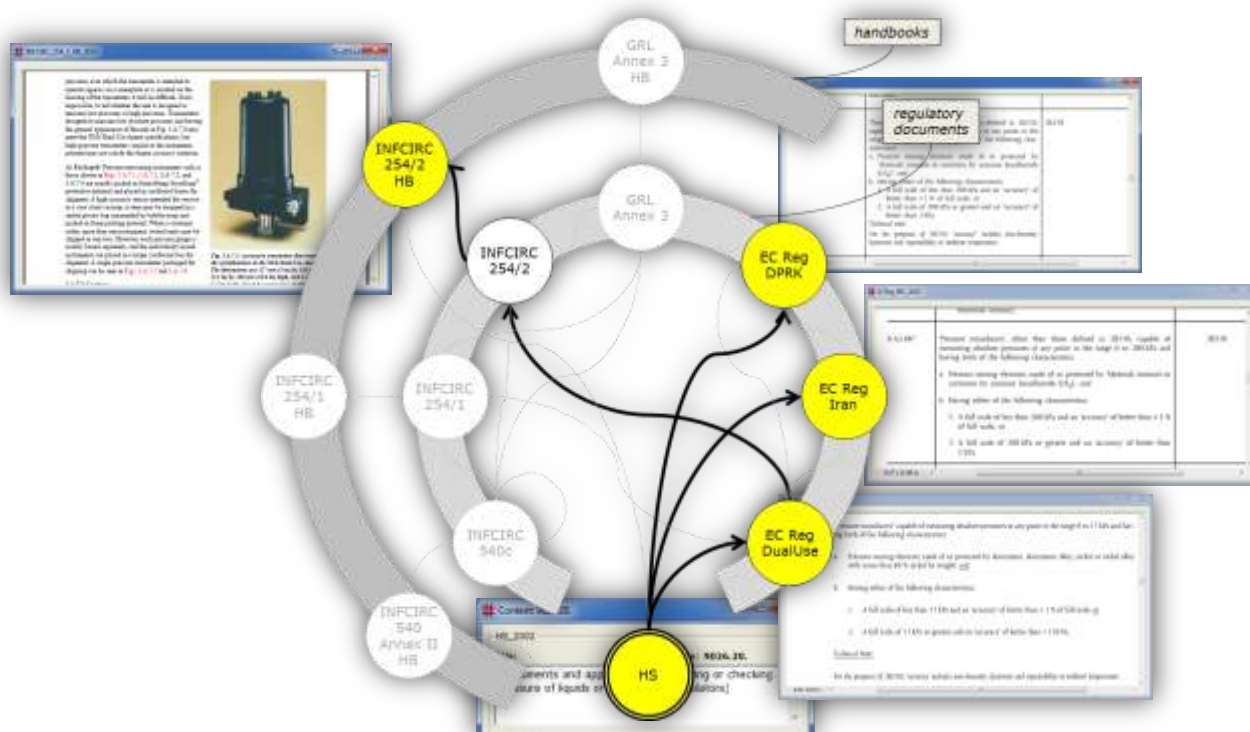
Virtual handbook on EC Reg 428/2009 Annex I in support to items' rating





# Possible uses of TBT –

Relating HS/CN customs descriptors to regulations and technical handbooks





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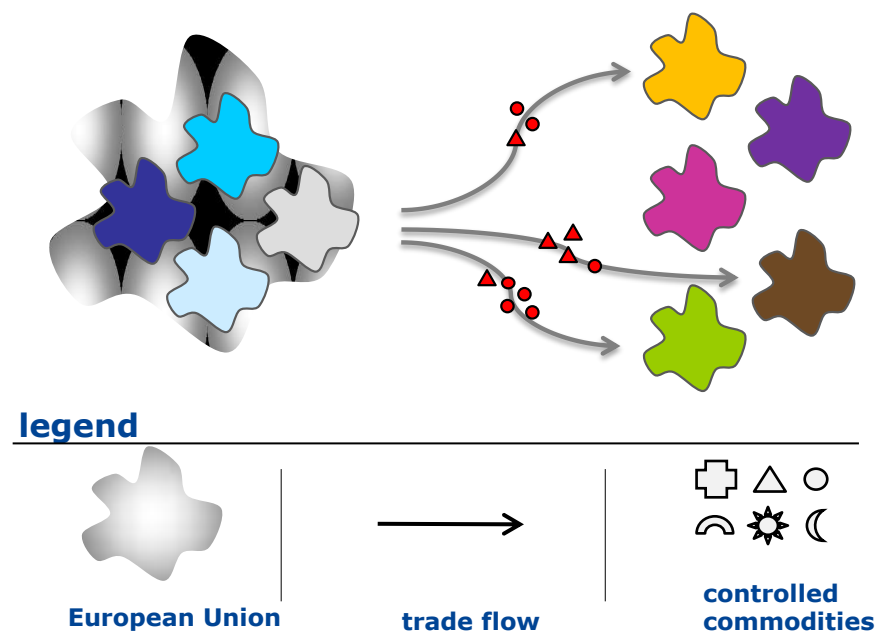
# Trade flow tool — Context

- EU export control policy definition:  
EC DG TRADE

*EC Reg 428/2009:*

*'It is desirable to achieve a uniform and consistent application of controls throughout the EU in order to promote EU and international security and to provide a level playing field for EU exporters'.*

- → Need to understand what goods are traded, towards which destinations ...





# Trade flow tool — Context

- No official data exist on INTRA and EXTRA EU exports of dual-use items.
- (No established way to record the dual-use trade exist).
- License data give a partial picture, and generally the data are not shared.
- **Trade data available from Eurostat (of customs origin) give upper bounds to the real dual-use trade** because the data are referred to customs categories of commodities (**Combined Nomenclature, CN**), not directly to the dual-use (DU) ones.
- → Still: the data can prove useful to profile the EU dual-use trade for better policy implementation.



# Trade flow tool — Building blocks

- Reference doc is EU Regulation on dual-use exports (388/2012, Annex I)  
→ list of dual-use items subject to export controls  
(Nuclear, Biological, Chemical, Missile, Wassenaar)
- Correlation table mapping DU items to CN descriptors (1033 CNs)  
→ Table by DG TAXUD  
[http://trade.ec.europa.eu/doclib/docs/2012/july/tradoc\\_149781.pdf](http://trade.ec.europa.eu/doclib/docs/2012/july/tradoc_149781.pdf)
- Trade data: COMEXT (external trade database) from EUROSTAT  
Bulk download facility at <http://epp.eurostat.ec.europa.eu>



# Trade flow tool — Approach

- Download all EU historical data related to 1033 CN descriptors.
- Store in database.
- Use a software platform\* to:
  - **Correlate the trade CN data with the DU categories.**
  - **Make the CN trade data readable from the DU categories.**
  - **Create views of the trade data as required by specific policy related questions.**

(\*) Tableau <http://www.tableausoftware.com/>



**Example**

# Trade analysis on dual-use chemicals

*CN chemicals*

*dual-use chemical*

*destination countries*

CN CODE	CN EXPLANATORY NOTE	GROUP	DU CODES	DU MEANING	UNIT	Argentina	Croatia	Iceland	ROK	Turkey	Ukraine
29221980	Amino-alcohols, their ethers and esters; salts..	G01	1C350.49., 1C350.53.	Diethylaminoethanol; Triethanolamine hydrochloride	Tons						
29225000	Amino-alcohol-phenols, amino-acid-phenols ..	G01	1C350.49., 1C350.53.	Diethylaminoethanol; Triethanolamine hydrochloride	Tons						
28301000	Sodium sulphides	G01	1C350.50.	Sodium sulphide	Tons						
29333999	Heterocyclic compounds with nitrogen hetero..	G01	1C350.10., 1C350.37.	3-Hydroxy-1-methylpiperidine; 3-Quinuclidone	Tons						
29209085	Esters of inorganic acids of non-metals and t..	G01	1C350.58.	Triisopropyl phosphite	Tons						
29055998	Halogenated, sulphonated, nitrated or nitros..	G01	1C350.15.	2-Chloroethano	Tons						
28111100	Hydrogen fluoride hydrofluoric acid	G01	1C350.24.	Hydrogen fluoride	Tons						
29181985	Carboxylic acids with additional oxygen funct..	G01	1C350.25.	Methyl benzilate	Tons						
28371100	Sodium cyanide	G01	1C350.45.	Sodium cyanide	Tons						
28121095	Thionyl dichloride thionyl chloride	G02	1C350.9.	Thionyl chloride	Tons						
28269080	Fluorosilicates, fluoroaluminates and other co..	G01	1C350.62.	Sodium hexafluorosilicate	Tons						
29211985	Acyclic monoamines and their derivatives; sa..	G01	1C350.48.	Di-isopropylamine	Tons						
29211100	Methylamine, dimethylamine or trimethylami..	G01	1C350.16., 1C350.20.	Dimethylamine; Dimethylamine hydrochloride; Hydrogen fluoride	Tons						
29141990	Acyclic ketones without other oxygen functio..	G01	1C350.39.	Pinacolone	Tons						
29221310	Triethanolamine	G02	1C350.46.	Triethanolamine	Tons						
29201900	Thiophosphoric esters phosphorothioates and..	G01	1C350.60., 1C350.61.	O,O-Diethyl phosphorothioate; O,O-Diethyl phosphite	Tons						
282619					Tons						

*quantities traded*

**EU General Export Authorisation on chemicals published in REGULATION (EU) No 1232/2011**

# References

## 'The Big Table':

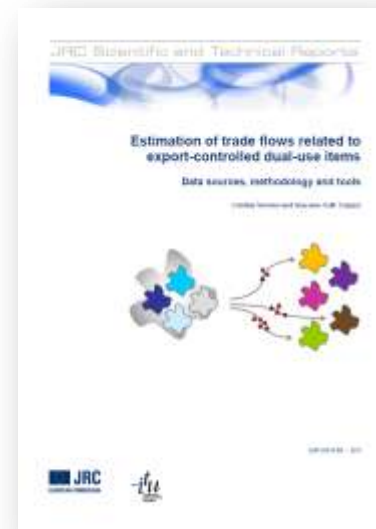
Versino C., Contini F., Chatelus R., Cojazzi G.G.M.  
*The Big Table. A Software Tool for Nuclear Trade Analysis.* JRC62804, 2011.



<http://publications.jrc.ec.europa.eu/repository/handle/11111111/22084>

## 'Trade Flows':

Versino C., Cojazzi G.G.M. *Estimation of trade flows related to export-controlled dual use items, Data sources, methodology and tools.* EUR 25214 EN, ISBN 978-92-79-23089-9, JRC68055, 2011.



<http://publications.jrc.ec.europa.eu/repository/handle/11111111/25466>