

МИНИСТАРСТВО УНУТРАШЊЕ
И СПОЉНЕ ТРГОВИНЕ



Dual Use Legislative: Scientific perspective from Faculty of Chemistry

Belgrade, 10th September 2024

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University of Belgrade - Faculty of Chemistry



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Presentation overview

Updates from 2022



- **Introduction**
to concept of Dual use
Dual use (CWC Annex of) Chemicals
- **Updates from 2022**
Scientific freedom vs. Export control
- **Erlangen Initiative** (1st Erlangen conference) Nov 2023
- **Health Security Partner training** (Romania, Serbia, Croatia) May 2024
- **Serbian chemical analysis center**
2024 update
Toward OPCW designated status

Seminar for **academia, scientific institutions** of the Republic of Serbia and **business representatives** regarding to control of exports and imports of **dual use items** (Hotel Mertropol, Belgrade 15th June 2022)

Co-organized by Serbian Ministry of Trade, Tourism and Telecommunication and Export Control and Related Border Security Program of US Department of State and US Embassy in Serbia.



Dual Use Legislative: Scientific perspective from Faculty of Chemistry



1. University of Belgrade – **Faculty of Chemistry**
2. Center for Chemistry, **Institute for Chemistry**, Technology and Metallurgy (National Institute)
3. **Innovation Centre** of the Faculty of Chemistry

We are all about chemistry:

be aware that
dual use is not only chemistry!

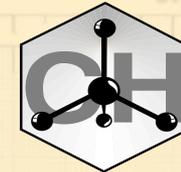
4. Intellectual Property Office of RS



University of Belgrade
Faculty of Chemistry



Institute for Chemistry
Technology and Metallurgy
University of Belgrade



World • Serbia • Centralna Srbija • Grad Beograd • Stari Grad

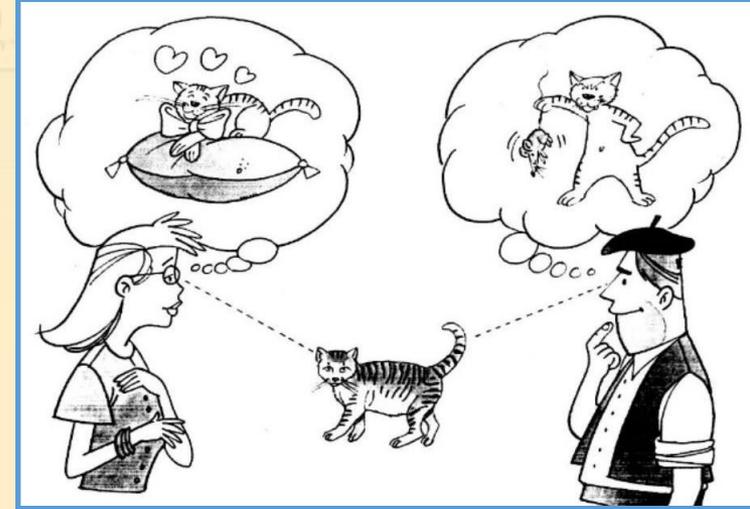
Instrumental Analysis Group, founded **1966**; also called
Center for Instrumental Analysis = „CIA“

- Instrumental analysis undergraduate/graduate courses
- Scientific service/teaching laboratory for University
- Research laboratory for professor Tešević group
- Super laboratory and accredited laboratory for unknown organic sample analysis
- Laboratory analyze chemical weapon samples (PT) from OPCW (Organisation for Prohibition of Chemical Weapons)

• **Who we are?**



'Dual-Use' definition



Materials, equipment and technology that have both civil and military use (peaceful vs non-peaceful purposes).

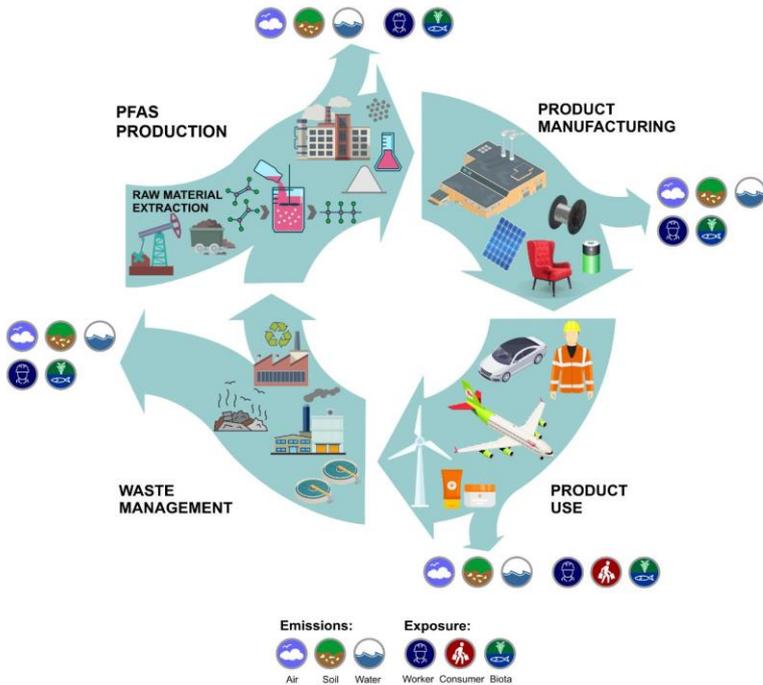
It includes tangible (materials and equipment) and intangible (technology and data)

Dual use chemicals?

The problems with PFAS chemicals



BASEL / ROTTERDAM / STOCKHOLM
CONVENTIONS



2019
MOVIE
PFOA

IMDb RATING
★ 7.6/10
105K

The PROBLEMS with PFAS

HOW DOES IT GET INTO OUR BODIES?

- Cooking with nonstick pans
- Products containing PFAS
- PFAS-contaminated food and water
- PFAS in air and dust

HEALTH PROBLEMS LINKED TO PFAS

- Kidney and testicular cancer
- High blood pressure and pre-eclampsia
- Higher cholesterol
- Lower infant birth weights
- Decreased vaccine response in children

PFAS

- Short for per- and polyfluoroalkyl substances, chemicals used in products such as non-stick cookware, food packaging, water-resistant clothing, and stain-resistant carpeting
- Also called 'forever chemicals,' they can take up to 1,000 years to break down in nature

WHAT CAN WE DO?

- INDIVIDUALS** - avoid products with PFAS and ask policymakers to limit or ban its use
- HEALTH PROFESSIONALS** - advise patients on how to avoid PFAS and support limits on its use
- BUSINESSES** - phase out use of PFAS and avoid non-essential uses
- POLICYMAKERS** - limit or ban PFAS



Emission of and exposure to PFAS during their lifecycle
(source: EEA-ETC report 2020)

- 5 000 - 10 000 PFAS compounds on the market (4700 with CAS)



Project: 101059534 — PFAStwin
HORIZON-WIDERA-2021-ACCESS-02



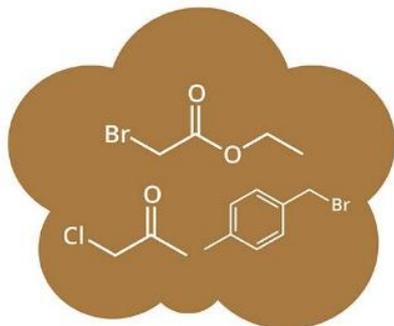
~1.2 € M Twinning to address the PFAS challenge in Serbia



Funded by the
European Union

CHEMICAL WARFARE WORLD WAR I

WORLD WAR I IS SEEN AS THE DAWN OF MODERN CHEMICAL WARFARE. SOME 50 DIFFERENT CHEMICAL AGENTS WERE DEPLOYED ON THE BATTLEFIELDS, AND 3,000 CHEMICALS WERE INVESTIGATED AS POTENTIAL WEAPONS. THEIR USE CAUSED APPROXIMATELY 1.3 MILLION NONFATAL CASUALTIES, AND 90,000-100,000 FATALITIES. HERE, WE SUMMARIZE THE MOST PREVALENT OF THE CHEMICALS USED.



TEAR GASES

(ethyl bromoacetate, chloroacetone & xylyl bromide)

SMELL & APPEARANCE

Both ethyl bromoacetate and chloroacetone are colorless to light yellow liquids with fruity, pungent odors. Xylyl bromide is a colorless liquid with a pleasant, aromatic odor.

EFFECTS

Tear gases are what are known as lachrymatory agents: They irritate mucous membranes in the eyes, mouth, throat, and lungs, leading to crying, coughing, breathing difficulties, and temporary blindness.

FIRST USED

1914 In August, the French used tear gas grenades against the German Army, to little effect.

ESTIMATED CASUALTIES

0 These gases were used to incapacitate enemies rather than to kill; the symptoms commonly resolved within 30 minutes of leaving the affected area.



CHLORINE

SMELL & APPEARANCE

Chlorine is a yellow-green gas with a strong, bleachlike odor. Soldiers described its smell as "a distinct mix of pepper and pineapple."

EFFECTS

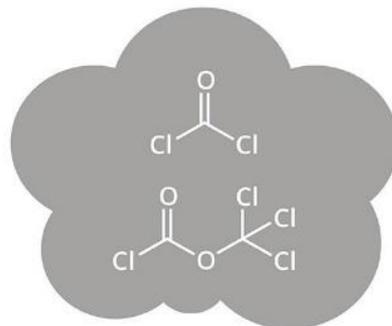
Chlorine reacts with water in the lungs, forming hydrochloric acid. Coughing, vomiting, and irritation to the eyes occur at low concentrations. At concentrations of 1,000 parts per million, it leads to rapid death.

FIRST USED

1915 German forces used chlorine near Ypres, Belgium, in April. British forces retaliated in September, at Loos, France.

ESTIMATED CASUALTIES

>1,100 Chlorine was devastating because troops were initially unequipped to deal with it. Later, gas masks limited its effectiveness.



PHOSGENE & DIPHOSGENE

(carbonyl dichloride & trichloromethane chloroformate)

SMELL & APPEARANCE

Phosgene is a colorless gas with a musty odor comparable to that of newly-mown hay or grass. Its density is four times that of air. Diposgene is a colorless, oily liquid.

EFFECTS

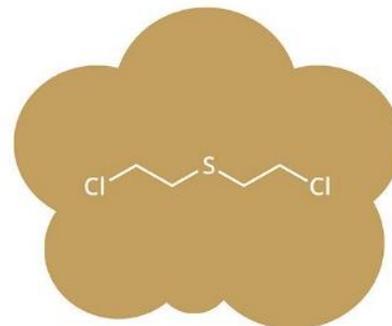
They react with proteins in lung alveoli, causing suffocation. They cause coughing, difficulty breathing, and irritation to the throat and eyes. Have delayed effects, not evident for 48 hours, leading to death.

FIRST USED

1915 In December 1915, German forces used phosgene against the British at Ypres.

ESTIMATED CASUALTIES

85% It's estimated that this pair caused a majority of gas-related fatalities. Phosgene was primarily deployed from gas canisters. Both chemicals were used to fill artillery shells.



MUSTARD GAS

(bis(2-chloroethyl) sulfide)

SMELL & APPEARANCE

When pure, mustard gas is a colorless and odorless liquid. In its impure form, it's used as a chemical agent. Then, it's yellow-brown in color and has a variable odor resembling garlic, horseradish, or rubber.

EFFECTS

Irritant and blistering agent that damages the eyes, skin, and respiratory tract. It causes chemical burns on contact with skin. Effects are delayed by hours, and repeat exposure increases sensitivity and blistering.

FIRST USED

1917 On July 12, 1917, German forces used mustard gas against the British at Ypres.

ESTIMATED CASUALTIES

2-3% The mortality rate of mustard gas casualties was low, but the gas's effects were debilitating, and patients required elaborate care.

Brief history of chemical weapons



Ancient Greece
circa 600 B.C.
Hellebore plants



World War II

Iran-Iraq War
1980-88
Iraq 1988
Mustard,
nerve agents



Syria
2013-17



?

Novichok

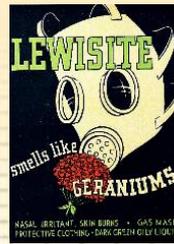
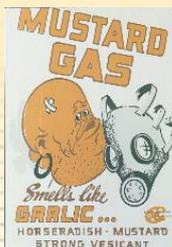
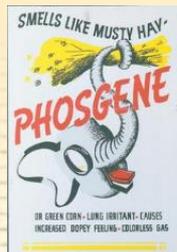
Middle Ages

Genghis Khan's
burning peat and
sulfur; poisoned
arrows



Great War

Chlorine,
Phosgene,
Mustard



Between two wars

Nerve agent
development

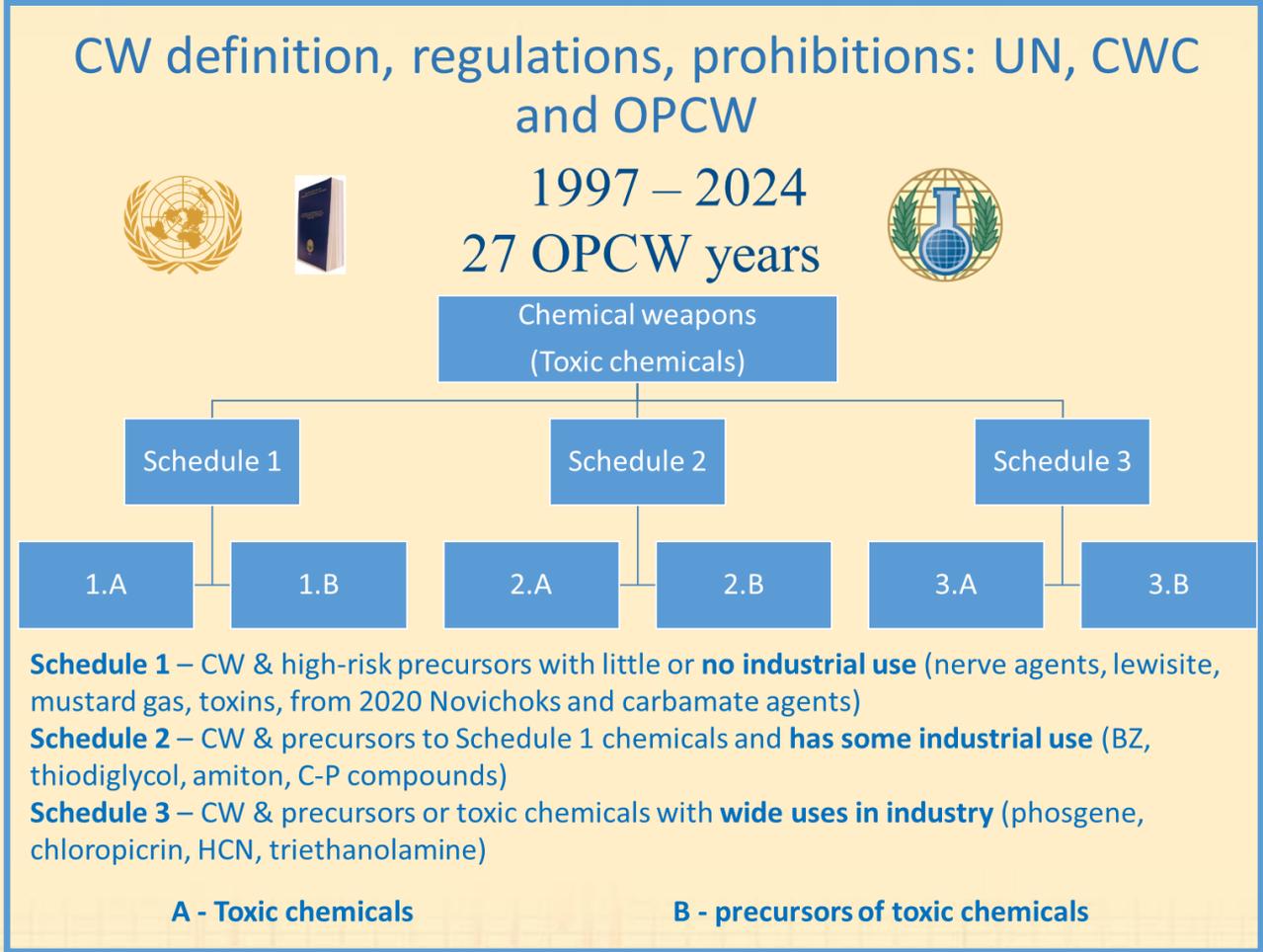
Cold war



Japan
1994-95
Sarin

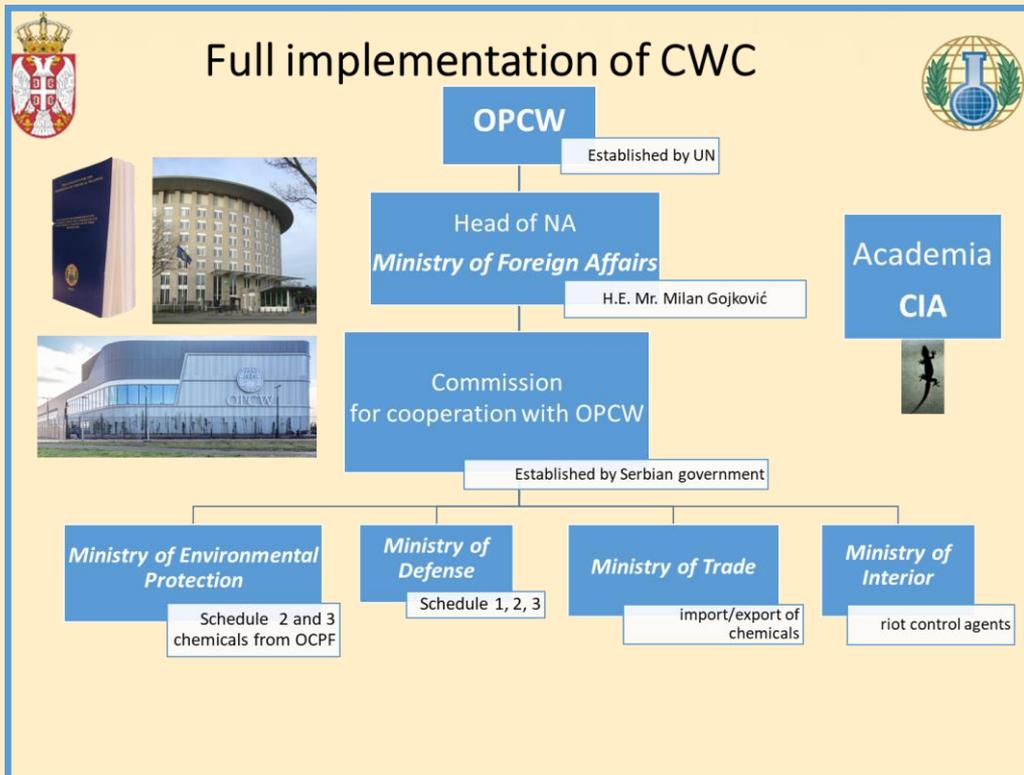


A chemist's perspective on Dual use items: chemicals covered by CWC + everything else



Dual use goods not covered by CWC

A chemist's perspective on Dual use goods: covered by CWC



University of Belgrade - Faculty of Chemistry
 Studentki trg 12-16 • P. O.
 Predmet: Izjava za uvoz

Statement for import

Ovim izjavljujemo da smo od dobavljača KEFO d.o.o. Beograd, Bačka 1u, Zemun, PIB 105046072, naručili sledeću hemikaliju: Isopropylphosphonic dichloride, tech. 90% 1G, kataloški broj: H27109, proizvođača: ALFA AESAR, u količini od 1G (1X1G)

Istu ćemo koristiti u cilju realizacije međunarodnog projekta L / ICA / ICB / 210502/17, donacije međunarodne Organizacije za zabranu hemijskog oružja (OPCW), a sve u cilju sprovođenja Konvencije o zabrani hemijskog oružja na teritoriji Republike Srbije. Kako je donacija dobijena od vrhovnog svetskog tela, projekat L / ICA / ICB / 210502/17 je dobio i sve potrebne saglasnosti organa Republike Srbije, a pre svega Komisije za saradnju između Srbije i OPCW, u skladu sa zahtevima iz čl. 10. Konvencije o zabrani hemijskog oružja. Letterhead of the end-user in the country of final destination

Predmetna roba neće biti izvezena iz Srbije. telekomunikacija Srbija

END-USE CERTIFICATE FOR DUAL-USE ITEMS

Article 4, paragraph 3 of the Regulation on procedures for issuing authorisations and certificates and on competence of the Commission for the control of exports of dual use items.

Izjavu dajemo radi dob

30. januar 2019. Beog.

A. Parties	
1. Exporter (Name, Address and Contact Details) KEFO d.o.o., Brcičeva 29, 1231 Ljubljana - Črnuče, Slovenia	3. Country of Final Destination Serbia
2. Consignee (Name, Address and Contact Details) KEFO d.o.o., Bačka 1u, 11080 Zemun, Serbia	
B. Items	
1. Items (detailed description of items and dual use code) H27109, Isopropylphosphonic dichloride, tech. 90% 1G carinska tarifa: CAS: 1498-46-0	2. Quantity (Units/Weight) 1G (1X1G)
3. End-Use (Specific purpose for which the items will be used) Realization of project L / ICA / ICB / 210502/17 and support for international cooperation between Republic of Serbia and Organization for Prohibition of Chemical Weapons (OPCW).	
4. Specification of the end-use location of the items University of Belgrade – Faculty of Chemistry, Studentski trg 12-16, 11156 Belgrade, Serbia	

I certify that the items described in Section B supplied by the exporter named in Section A 1:

- will only be used for the purposes described in Section B 3 and that the items or any replica thereof are intended for final use in the country named in Section A 3;
- that the items or any replica thereof will not be used in any nuclear explosive or unsafeguarded nuclear fuel-cycle activity;
- that the items will not be used for any purpose connected with chemical or biological or nuclear weapons, or missiles capable of delivering such weapons

I further certify that the company will not re-export the items to third countries without the consent of the Ministry of Economic Development and Technology of the Republic of Slovenia. Re-exports to EU countries or Countries listed in Annex IIa of the Regulation (EC) No. 428/2009 do not require any consent of the Ministry of Economic Development and Technology of the Republic of Slovenia.

Stamp	Original signature of the responsible person of the end-user Prof. Ivan Grželić, Dean Name and title of signer in block letters
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Dual use chemicals covered by CWC

End use certificate for dual use items

Academia & Regulatory Authorities ICP

Inductively coupled plasma vs. Internal Compliance Programme



The "Erlangen Initiative"

In May 2023, the German Federal Foreign Office with the support of the United Nations Office for Disarmament Affairs (UNODA), the German Federal Office for Economic Affairs and Export Control (BAFA) and the Fraunhofer Society has launched the "Erlangen Initiative".

- The "**Erlangen Initiative**" is an informal outreach process to Academia supporting the global implementation of United Nations Security Council Resolution (UNSCR) 1540 (2004).
- The initiative serves as a dialogue forum between national export and their control regulators academic sector and research institutions.

8-9 November 2023, Export control authorities and Academia together in the "**Erlangen international first Conference**" in Nuremberg and Erlangen, Germany

Academic freedom vs. Export control

Glossary

The following definitions are not binding. Only the statutory provisions are binding.

Term	Definition/Explanation
0011	Example of the numbering of a good, a so-called items list number, of Part I Section A of the Export List (EL). This section lists military items. HADDEX: Part 11 (German)
1A202	Example of the numbering of a good, a so-called items list number, of Annex I of the EU Dual-Use Regulation. This Annex lists dual-use items. HADDEX: Part 11 (German)
Annex I of the EU Dual-Use Regulation	Annex I of the EU Dual-Use Regulation establishes a uniform list of dual-use items for all Member States of the European Union and summarises the internationally agreed controls from the export control regimes for which there is an authorisation required for exports from the customs territory of the EU. https://www.bafa.de/DE/Aussenwirtschaft/Ausfuhrkontrolle/Gueterlisten/gueterlisten.html?nn=8065706
Annex IV of the EU Dual-Use Regulation	Annex IV of the EU Dual-Use Regulation covers a subset of the items listed in Annex I. Items in Annex IV are also subject to authorisation for transfers within the customs territory of the EU (so-called intra EU-transfers). https://www.bafa.de/DE/Aussenwirtschaft/Ausfuhrkontrolle/Gueterlisten/gueterlisten.html?nn=8065706
Australla Group (AG)	International export control regime for chemicals and biological agents. HADDEX: Part 11, Chapter 3 (German)
Basic scientific research (in the sense of the GEA /GTN)	Experimental or theoretical undertaken principally to acquire new knowledge of the fundamental principles of phenomena or observable facts, not primarily directed towards a specific practical aim or objective (see definitions in Annex I of the EU Dual-Use Regulation and definitions for the Export List). HADDEX: Part 11, Chapter 5.4 (German)
Buyer	The buyer is the person who acquires the items but does not physically receive them. HADDEX: Part 1, Chapter 4.5 (German)
Catch-All provisions	Allow for the establishment of authorisation requirements for the export or intra EU-transfer with subsequent export of non-listed items that are intended for a sensitive end-use (see e. g. Art. 4 EU Dual-Use Regulation or Section 11 para. 3 and 4 AWV). HADDEX: Part 5 (German)

End use certificate
for dual use items

Statement for
import

Export Control and Academia Manual (2nd Edition English version)

- This Manual is primarily aimed at the academic and research sector, its representatives and employees as well as scientists as private individuals.
- The goal is to raise the awareness of universities and research institutions for the aims of export control and to support them in the application of foreign trade law.

Erlangen international first Conference



Manual Export Control and Academia



https://www.bafa.de/SharedDocs/Downloads/EN/Foreign_Trade/ec_manual_export_control_and_academia.html



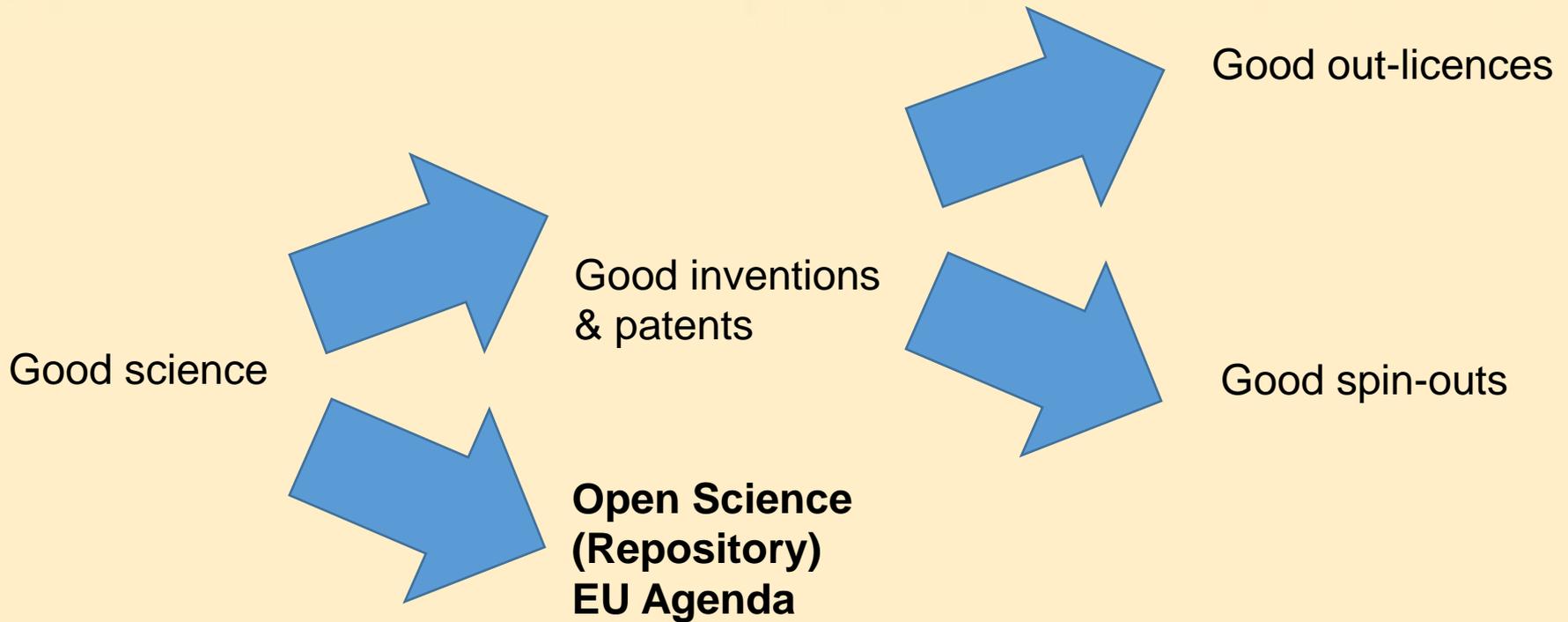
University Technology Transfer Best Practices and Intellectual Property Security Training Workshop Series



Time	Session	Speakers
Session # 1 (23 May 2024)		
9:00 AM - 9:30 AM	Welcome and Opening Remarks	HSP
9:30 AM - 9:45 AM	Completion of Preliminary Questionnaire	HSP
9:45 AM - 10:30 AM	Intellectual Property Theft: Concerns and Best Practices	Dr. Sumita Anant
10:30 AM - 11:15 AM	Breakout Discussion: Intellectual Property Security	HSP
11:15 AM - 11:30 AM	Break	
11:30 AM - 12:00 PM	Internal Collaboration: Key Players	Dr. Maria Espona
12:00 PM - 1:00 PM	ROMANIA Perspective: TTO Roles and Responsibilities, and Important Players	Dr. Stefan Eugen Szedlacsek
1:00 PM	Adjourn	
Session # 2 (30 May 2024)		
9:00 AM - 9:15 AM	Welcome and Recap from Week 1	HSP
9:15 AM - 9:45 AM	Research and Technologies of Concern	Dr. Maria Espona
9:45 AM - 10:15 AM	Breakout Discussion: How to Protect IP Without Discouraging Research	Dr. Maria Espona
10:15 AM - 11:00 AM	Human Resources Best Practices and Academic Vetting	Dr. Sumita Anant
11:00 AM - 11:15 AM	Break	
11:15 AM - 11:45 AM	Know-Your-Collaborator/Common External Actors	Dr. Viji Vijayan
11:45 AM - 12:15 PM	Breakout Discussion: How to Prevent Threats Through Academic Vetting	HSP
12:15 PM - 1:00 PM	SERBIA Perspective: Role of the Researcher and University in Tech Transfer Process	Dr. Ljubodrag Vujisic
1:00 PM	Adjourn	
Session # 3 (6 June 2024)		
9:00 AM - 9:15 AM	Welcome and Recap from Week 2	HSP
9:15 AM - 10:00 AM	CROATIA: Technology Transfer Framework and Perspectives/IP Security Lessons Learned	Mr. Domagoj Racic
10:00 AM - 10:30 AM	Cybersecurity Threats: Actors, Vulnerabilities, and Solutions	Jake May
10:30 AM - 11:15 AM	Activity/Exercise: Identifying Vulnerabilities Throughout Tech Transfer Process	Dr. Maria Espona
11:15 AM - 11:30 AM	Break	
11:30 AM - 12:15 PM	Breakout Discussion: Mapping Priority Next Steps for Your Institutions	Dr. Maria Espona
12:15 PM - 12:30 PM	Post Training Questionnaire	HSP
12:30 PM - 1:00 PM	Closing Remarks	HSP

Academic freedom/Export control/Security (IP, TT, Cyber, National)

Two Types of Research Exploitation: Holistic approach vs. IP/commercialization



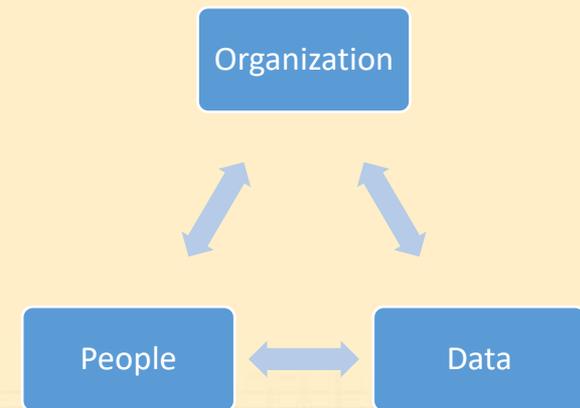
The starting point is
HIGH QUALITY
BASIC SCIENCE

Public domen

New Research publications,
PhD dissertations,
Scientific protocols...

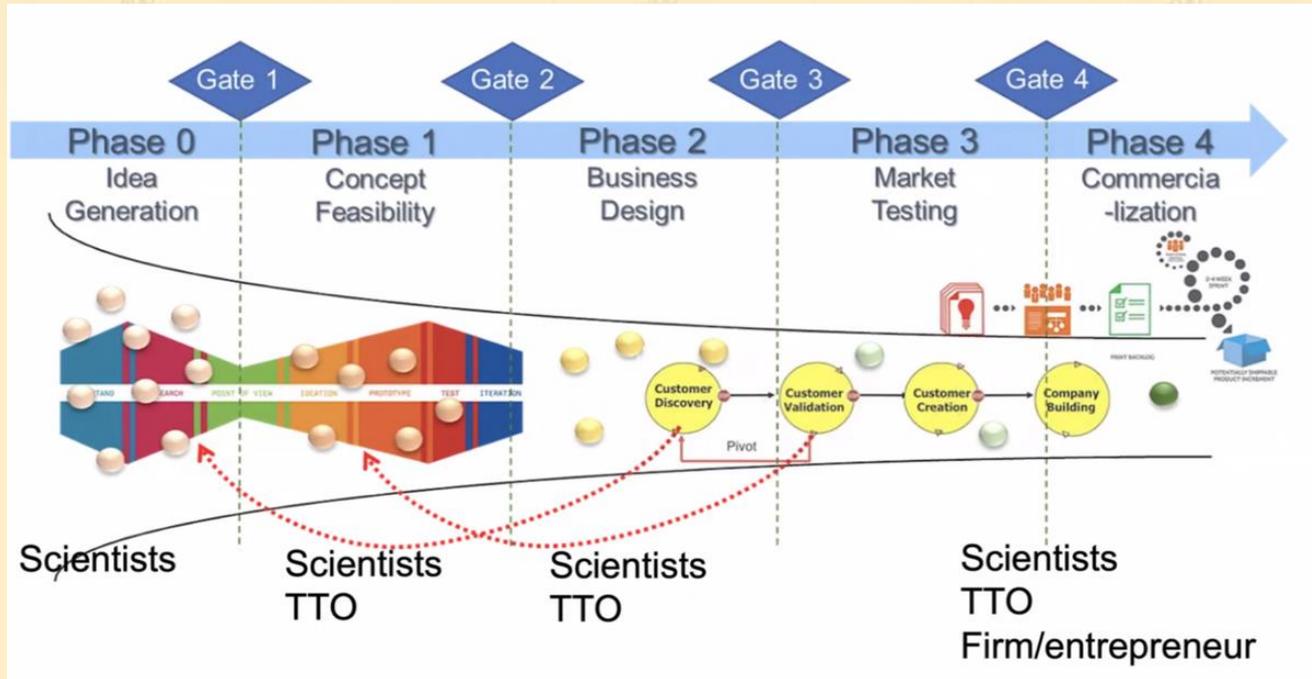
Critical and emerging technologies

- Advanced Computing
- Directed Energy
- Advanced Engineering Materials
- Financial Technologies
- Advanced Gas Turbine Engine Technologies
- Advanced Manufacturing
- Hypersonics
- Advanced Nuclear Energy Technologies
- **Artificial Intelligence (AI)**
- Renewable Energy Generation and Storage
- **Autonomous Systems and Robotics**
- Networked Sensors and Sensing
- **Semiconductors and Microelectronics**
- Advanced and Networked Sensing and Signature Management
- **Biotechnologies**
- Human-Machine Interfaces
- **Quantum Information Technologies**
- Communication & Networking Technologies
- **Space Technologies and Systems**



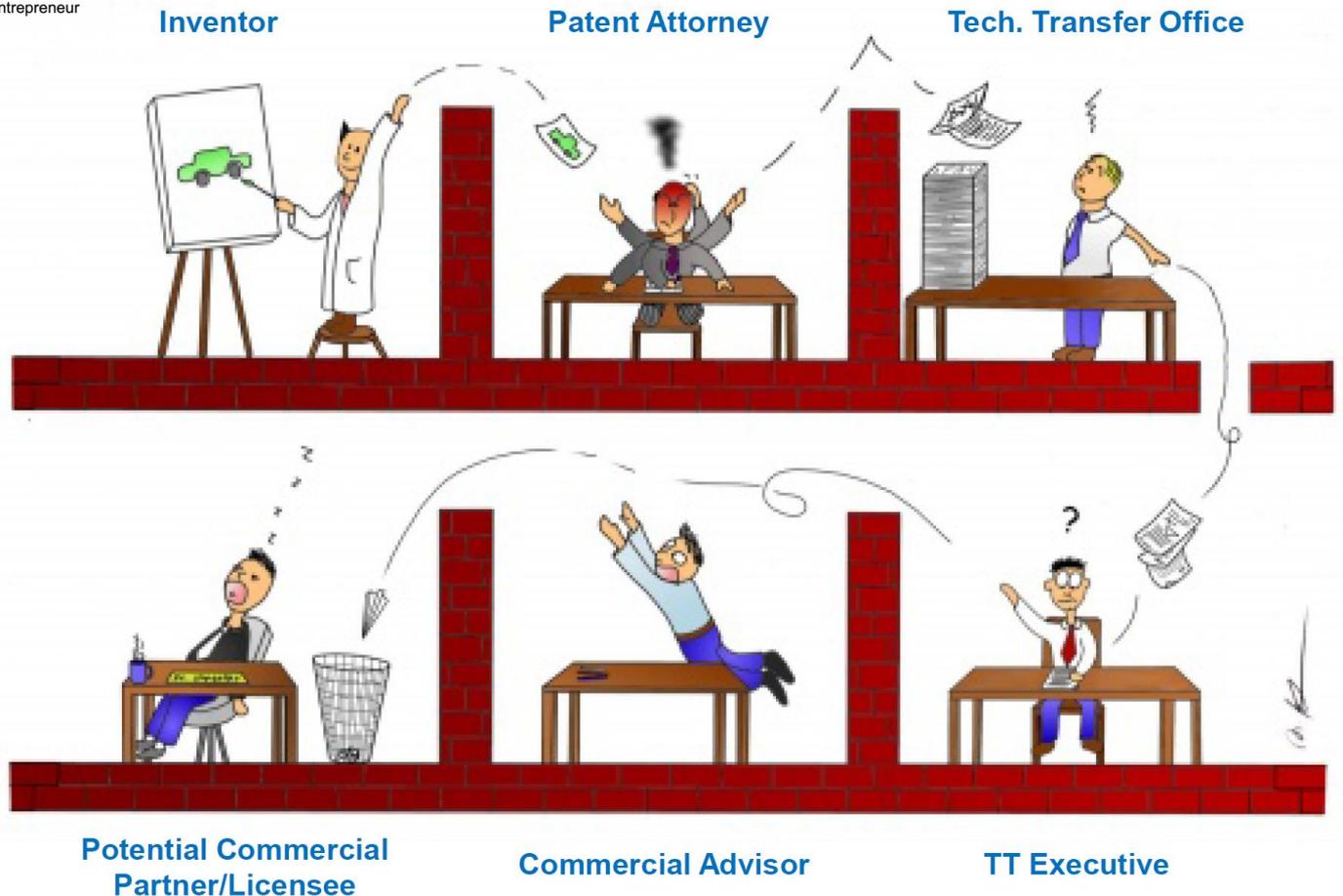
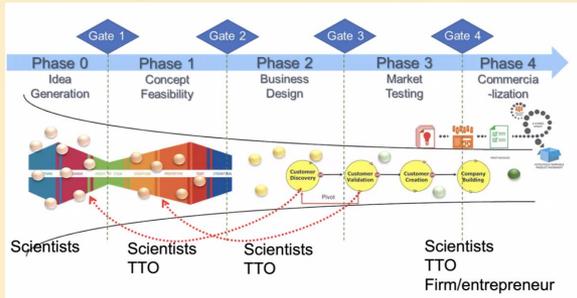
Risk of misuse of research

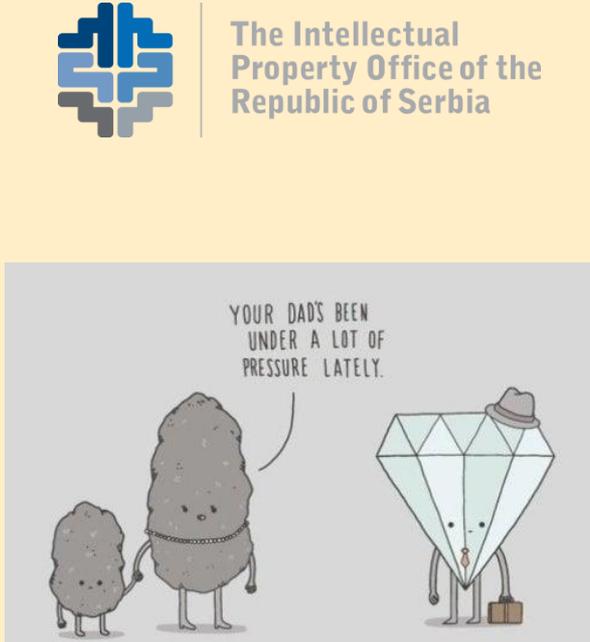
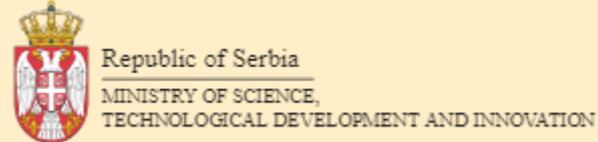
Innovation process vs. Research and technologies of concern/ recommendations



- Dual-use research and technologies can have both **positive** and **negative** implications, demanding proactive attention.
- Collaboration between technology transfer professionals and researchers is crucial for early identification and mitigation of concerns.
- Universities and research institutions should take the initiative in harmonizing their IP policies to reinforce their commitments to their national security objectives.
- Balancing the promotion of innovation with ensuring responsible progress is of paramount importance.

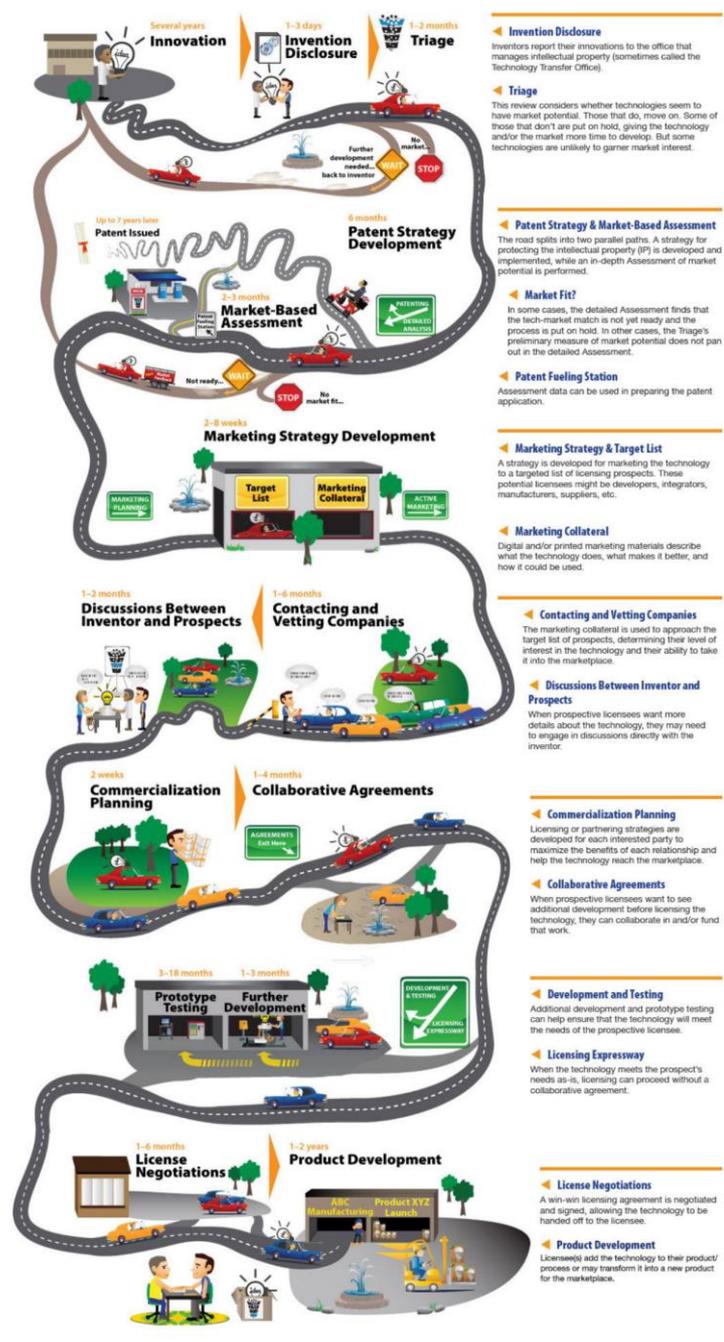
Expectations vs. Reality in Technology Transfer





Among the others, we rely on the experience of personnel at Sci Fund Agencies, Investors funds, journal editors, evaluators, reviewers...

The Road to Technology Transfer

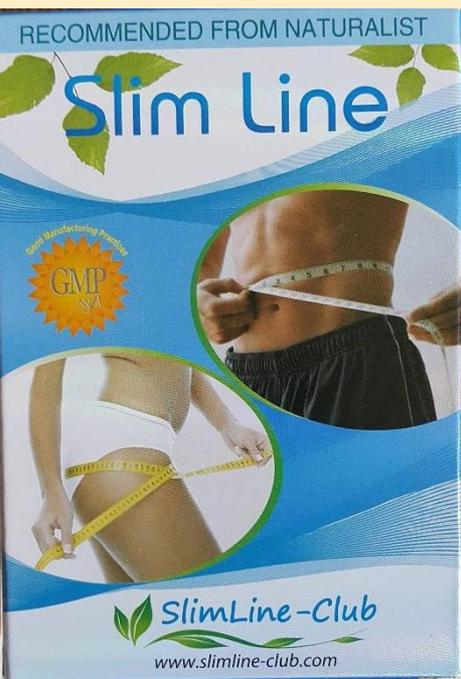


- Invention Disclosure**
Inventors report their innovations to the office that manages intellectual property (sometimes called the Technology Transfer Office).
- Triage**
This review considers whether technologies seem to have market potential. Those that do, move on. Some of those that don't are put on hold, giving the technology and/or the market more time to develop. But some technologies are unlikely to garner market interest.
- Patent Strategy & Market-Based Assessment**
The road splits into two parallel paths. A strategy for protecting the intellectual property (IP) is developed and implemented, while an in-depth Assessment of market potential is performed.
- Market Fit?**
In some cases, the detailed Assessment finds that the tech-market match is not yet ready and the process is put on hold. In other cases, the Triage's preliminary measure of market potential does not fit in the detailed Assessment.
- Patent Fueling Station**
Assessment data can be used in preparing the patent application.
- Marketing Strategy & Target List**
A strategy is developed for marketing the technology to a targeted list of licensing prospects. These potential licensees might be developers, integrators, manufacturers, suppliers, etc.
- Marketing Collateral**
Digital and/or printed marketing materials describe what the technology does, what makes it better, and how it could be used.
- Contacting and Vetting Companies**
The marketing collateral is used to approach the target list of prospects, determining their level of interest in the technology and their ability to take it into the marketplace.
- Discussions Between Inventor and Prospects**
When prospective licensees want more details about the technology, they may need to engage in discussions directly with the inventor.
- Commercialization Planning**
Licensing or partnering strategies are developed for each interested party to maximize the benefits of each relationship and help the technology reach the marketplace.
- Collaborative Agreements**
When prospective licensees want to see additional development before licensing the technology, they can collaborate in and/or fund that work.
- Development and Testing**
Additional development and prototype testing can help ensure that the technology will meet the needs of the prospective licensee.
- Licensing Expressway**
When the technology meets the prospect's needs as-is, licensing can proceed without a collaborative agreement.
- License Negotiations**
A win-win licensing agreement is negotiated and signed, allowing the technology to be handed off to the licensee.
- Product Development**
Licensee(s) add the technology to their product/process or may transform it into a new product for the marketplace.



Do we really need extremely demanding chemical analysis? Misuse/Dual-use, or no?

August 2017
Undergrad Course
**FOOD
CONTAMINANTS!**



Република Србија
МИНИСТАРСТВО ЗДРАВЉА
Сектор за инспекцијске послове
Број: 515-04-657/2014-10
Датум. 14.02.2014.године
Београд, Немањина бр.22-26
Тел. 011/3117400
ДМ

SLIM LINE CLUB DOO

Br. 18/14
18.02. 2014. год.
BEOGRAD, Branka Krsmanovića 7



Standard chemical analysis

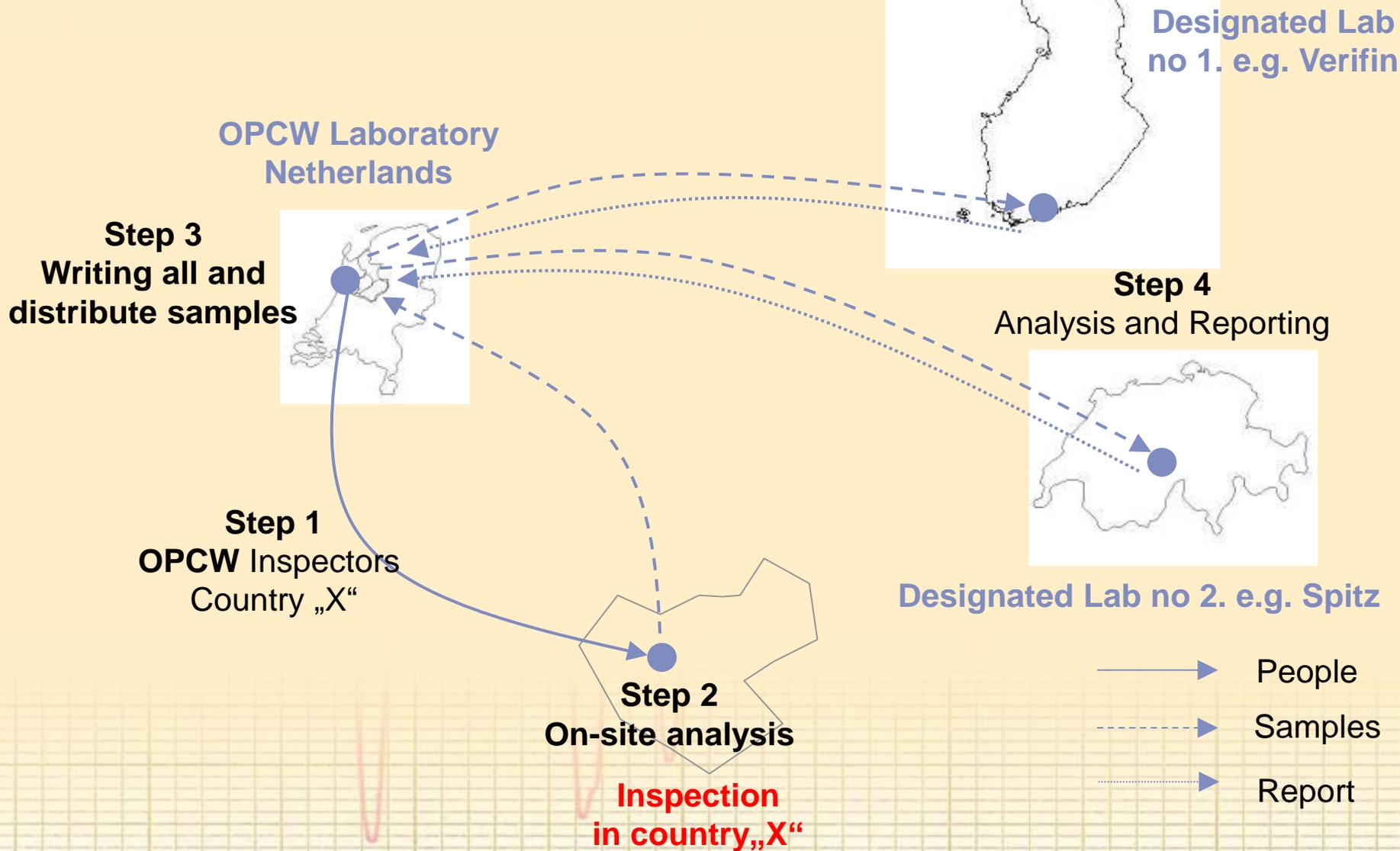
Министарство здравља на основу чл. 161. Закона о општем управном поступку („Сл. лист СРЈ“, бр.33/97 и 31/2001 и „Сл. гласник РС“, бр. 30/2010) на захтев **Slim Line Club doo, Бранка Крсмановића бр.7, 11050 Београд**, издаје

У В Е Р Е Њ Е

Потврђује се да је дијететски производ – додатак исхрани **SlimLine Soft gel, 36 капсула**; за **Slim Line International doo, Skopje, ul. Vasil Stefanovski 26a, 1000 Skopje, Makedonija** производи **Kunming Lingao Biotechnology Co. Ltd, 204#Room, Building C, Distric C, Funchun Garden, Kunming City, Yunnan Province, P.R. China**, на основу чл. 22, 23. и 23а Правилника о здравственој исправности дијететских производа („Сл. гл. РС“, бр. 45/2010, 27/2011, 50/2012) уписан у базу података коју води Министарство здравља.

Misuse/Dual-use, or No?

OPCW inspection: sampling and analysis



On-site chemical weapons analyses in pictures



Photo credits:



HOTZONE[®]
SOLUTIONS

www.dw.de



The Hague. 13 September 2013

Our work is only possible due to the indispensable contributions of the OPCW and the WHO. We also deeply appreciate the efficient and effective assistance provided by the OPCW-designated laboratories in Finland, Germany, Sweden and Switzerland.

We also wish to thank you, Sir, for the confidence you have placed in us.

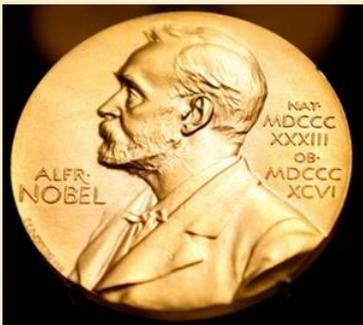
We count on your and the others continued support as we continue and hopefully soon complete our investigation into the other allegations.

Respectfully yours,

Professor Åke Sellström (Head of Mission)

Mr Scott Cairns
(Head of and signing for the OPCW Component)

Dr Maurizio Barbeschi
(Head of and signing for the WHO Component)



The OPCW Laboratory twinning initiative 2021-23

- Assisted Laboratory **CIA University of Belgrade**
- **OPCW**
- Assisting Laboratory **VERIFIN University of Helsinki**



www.chem.bg.ac.rs/projekti/156/index-en.html

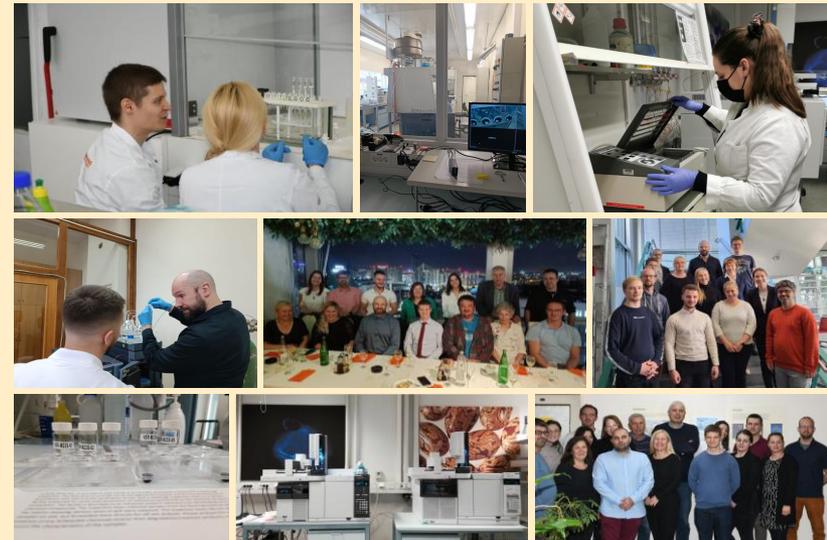


Twining initiative 2021-23

VERIFIN and CIA



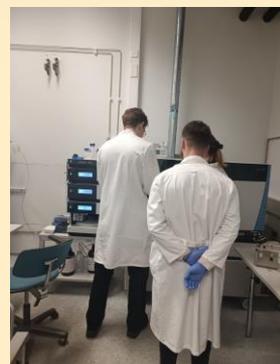
- **Analytical skills development trainings**
online and onsite trainings
- **Mentorship visits**
recomenations and lesson learn
- **Participation in CCACT tests**
participation and lesson learn
- **Bilateral PT organization**
real OPCW PT scenario and evaluation
- **Final meeting**
conclutions, recomendations and future plans
- **CIA Lab score maximum possible score in OPCW CCACT and VERIFIN Bilateral PT**



OPCW

26 Designated Laboratories

Twinning initiative

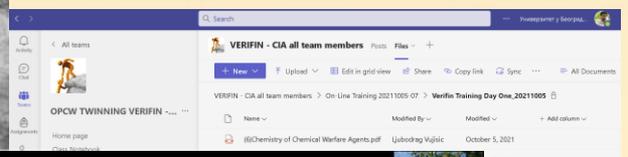


LABORATORY 02

I. Summary
 Laboratory 02 reported all six of the spiking chemicals and presented sufficient data to the OPCW. The presented names, structures, CAS numbers and CWC schedule numbers were all correct. No chemicals were reported for samples VER-BPT23-02 and VER-BPT23-05.

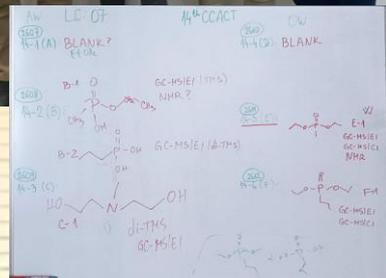
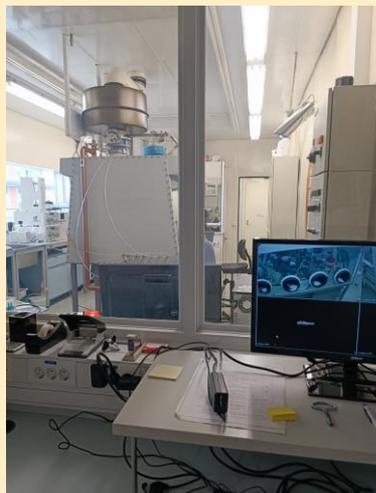
A summary of the reported chemicals is tabulated below:

Sample Code	Spiking chemical	Chemical Name	Chemical Reported	Key
VER-BPT23-01	A	Propylphosphonic acid	X	'-' = not reported
VER-BPT23-01	B	1,2-Bis(2-hydroxyethylthio)ethane	X	'X' = chemical identified & identification supported by sufficient analytical data
VER-BPT23-03	C	3-Quinuclidinol	X	
VER-BPT23-04	D	3,3-Dimethylbutan-2-ol	X	
VER-BPT23-06	E	3-Quinuclidinol	X	
VER-BPT23-06	F	Thiodiglycol	X*	'O' = insufficient data presented to support identification
		Score	A	



ANALYSIS STRATEGY AND REPORTING
 OPCW Twinning
 Oct 5, 2021
 Hanna Hakola

HELSINGIN YLIOPISTO
 HELSINGFORS UNIVERSITET
 UNIVERSITY OF HELSINKI



Twining initiative outcomes and CIA perspective

**Increase
competence and
support industry
governmental
institutions**

**Analytical and
education training
center for 21st
century needs**

**Long term OPCW
designated status**

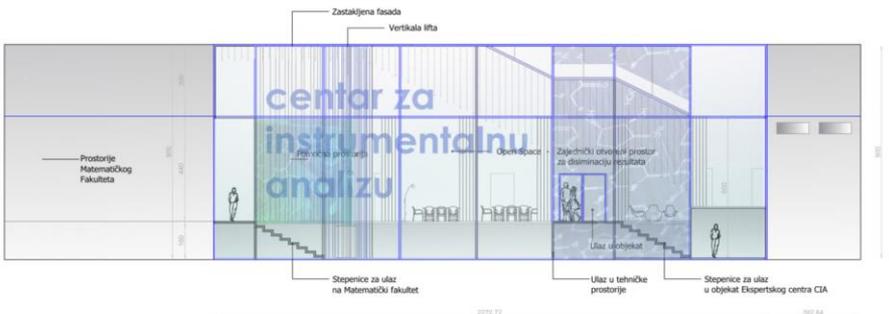
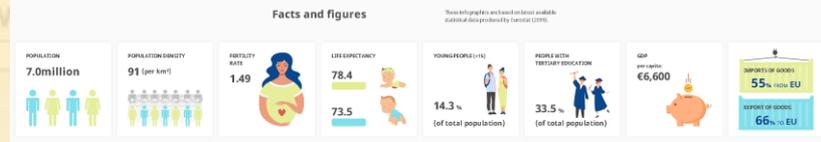
**Sustainable scientific
cooperation and
founding**

**Center of Excellence
(Regional center)**

IPF8, WB15-SRB-SOC-02, Component 2

Serbian chemistry perspective?

We applied for € 10 M grant for Expert center for chemical analysis



EIB granted our project first phase for Conceptual and main design 2019

Establishing the expert Center for chemical analysis: testing, determination and identification of unknown substances from various sample types

Designed for industry, medicine, pharmacy, army, education, science, governmental institutions...

- Pharmaceutical frauds: fake vaccine
- Experts and cutting edge equipment at same spot
- Industrial frauds: 26 t of fake raw material
- Cultural heritage preservation
- Laboratory for trace chemical weapons analysis

All types of chemical analysis at one spot – available for everyone

Slides from 2022 presentation at Hotel Metropol

0.1. НАСЛОВНА СТРАНА ГЛАВНЕ СВЕСКЕ ТЕХНИЧКЕ ДОКУМЕНТАЦИЈЕ / COVER PAGE OF MAIN BOOK

0 – ГЛАВНА СВЕСКА / MAIN BOOK

Investitor: Република Србија, Министарство просвете, науке и технолошког развоја
 Beneficiary: Republic of Serbia, Ministry of Education, Science and Technological Development
 Objekt: Експертски центар „Молекулска форензика” - Реконструкција и доградња Блока Д Хемијског факултета Универзитета у Београду, спратности По+П+6, на к.п.бр. 1727/1 К.О. Стари град
 Facility: Chemical Analysis Expert Centre - Reconstruction and Extension of Block D of Faculty of Chemistry, University of Belgrade, number of floors B+G+6, on cadastral lot number 1727/1, cadastral municipality Stari Grad
 Vrsta техничке документације: ИДР Идејно решење
 Technical documentation: Conceptual Solution
 За грађење/извођење радова: реконструкција и доградња
 Type of works: Reconstruction and Extension
 Пројектант: Infinity Global Consulting доо, Београд
 Designer: Коче Капетана 14, Београд
 Сања Шовран
 Потпис:



DRAWING TITLE NAZIV CRTEŽA	FIRST FLOOR PLAN - NEW Osnova I sprat - novoprojektovano
SUBPROJECT POTPROJEKAT	WB15-SRB-SOC-02 High Education Infrastructure WB15-SRB-SOC-02 Infrastruktura za visoko obrazovanje
SUBPROJECT COMPONENT	Component 2: Chemical Analysis Expert Centre within the Faculty of Chemistry, University of Belgrade - Reconstruction and Extension of Block D of Faculty of Chemistry, University of Belgrade, number of floors B+G+6, on cadastral lot number 1727/1, cadastral municipality Stari Grad
KOMPONENTA POTPROJEKTA	Komponenta 2: Ekspertski centar "Molekularna forenzika" - Rekonstrukcija i dogradnja Bloka D Hemijskog fakulteta Univerziteta u Beogradu, spratnosti Po+P+6, na k.p.br. 1727/1 K.O. Stari grad
BENEFICIARY KORISNIK	Republic of Serbia, Ministry of Education, Science and Technological Development Republika Srbija, Ministarstvo prosvete, nauke i tehnološkog razvoja University of Belgrade - Faculty of Chemistry Hemijski fakultet Univerziteta u Beogradu
PROJECT PROJEKAT	Western Balkans Investment Framework (WBIF) Infrastructure Project Facility Technical Assistance 8 (IPF8) Investicioni okvir za Zapadni Balkan PODRUŠKA INFRASTRUKTURNIM PROJEKTIMA - TEHNIČKA PODRŠKA 8 (IPF8)
Project Management	Designer
COWI	IPF
IGC INFINITY GLOBAL CONSULTING LLC	

BIG ANNOUNCEMENT: UBFC infrastructure project is here

[Portal javnih nabavki \(ujn.gov.rs\)](https://ujn.gov.rs)

N1 info
<https://n1info.rs/biznis/tender-za-formiranje...>

Tender za formiranje ekspertskog centra "Molekulska forenzika" ...
wea Aug 29, 2024 · Ministarstvo prosvete raspisalo je tender za rekonstrukciju i dogradnju Bloka D Hemijskog fakulteta Univerziteta u Beogradu, odnosno formiranja ekspertskog centra ...

Gradnja
<https://www.gradnja.rs/hemijiski-fakultet...>

CSI: Beograd – Tender za centar forenzičara na Hemijskom ...
wea Aug 29, 2024 · Radi formiranja ekspertskog centra „Molekulska forenzika“ predviđena je rekonstrukcija dela objekta – Bloka D, kao i njegova dogradnja ka atrijumu za formiranje ...

Naslovi.net
<https://naslovi.net/2024-08-30/biznis/hemijiski...>

Hemijski fakultet dobija ekspertski centar „Molekulska forenzika“
wea Aug 30, 2024 · Ministarstvo prosvete raspisalo je tender za rekonstrukciju i dogradnju Bloka D Hemijskog fakulteta Univerziteta u Beogradu, odnosno formiranja ekspertskog centra ...

mondo.rs
<https://eupravozato.mondo.rs/nauka-i-tehnologija/...>

Hemijski fakultet u Beogradu će dobiti ekspertski centar ...
wea Aug 29, 2024 · Hemijski fakultet u Beogradu će dobiti ekspertski centar "Molekulska forenzika", a vrednost poduhvata je procenjena na 450 miliona dinara. Ministarstvo ...

eKapija
<https://me.ekapija.com/sr/news/4843989/hemijiski...>

Hemijski fakultet u Beogradu dobija ekspertski centar "Molekulska ...
wea Hemijski fakultet u Beogradu dobija ekspertski centar "Molekulska forenzika", u planu rekonstrukcija i dogradnja - Raspisan tender vredan 450 miliona dinara



Phase 1: Tender for infrastructure value 450 000 000 RSD

Naslovna > Nauka i tehnologija > Obrazovanje i edukacija

Hemijski fakultet dobija ekspertski centar Molekulska forenzika: Zgrada će imati novi izgled, a studenti bolje uslove

Plan je da se deo nastave i istraživanja sa Hemijskog fakulteta u Beogradu odvija u okviru budućeg BIO4 kampusa čime će studenti steći bolje uslove za laboratorijske vežbe i slušanje kurseva.

<https://eupravozato.mondo.rs>

Objavljeno 29.08.2024. 15:53h

Portal javnih nabavki

JAVNE NABAVKE EKSPLO 2022

Planirane javne nabavke
Postupci javnih nabavki
Oduzete i ugovori
Registar ugovora
Zaštita prava
Izveštaji
Opisni i dokumenti
Opisni i dokumenti
Opisni i dokumenti
Postupci JEP i komisija
Registar javnih ugovora
Spisnici
Šifarnice i liste

Rekonstrukcija i dogradnja Bloka D Hemijskog fakulteta Univerziteta u Beogradu - Ekspertski centar „Molekulska forenzika“

Opisni i dokumenti

Brj...	Ime projekta	Procenjena vrednost	Ugov	NST	Vreme isporuke	Status	Poslednja izmena
0007	Rekonstrukcija i dogradnja Bloka D Hemijskog fakulteta Univerziteta u Beogradu - Ekspertski centar „Molekulska forenzika“	450.000.000,00	45454500	PC11	3. kvartal	Pocetna nabava	26.07.2024

Opisni i dokumenti

Opis	Prilozak	Broj opisa	Ime opisa	Opis isporuke	Datum slanja	Datum izbora	Stat
2024C 400 0001357	zavesti poziva				28.08.2024	29.08.2024	Obja

Opisni i dokumenti

Rekonstrukcija i dogradnja Bloka D Hemijskog fakulteta Univerziteta u Beogradu - Ekspertski centar „Molekulska forenzika“

Opisni i dokumenti

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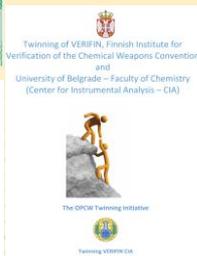
Acknowledgements to Organizers and



CIA Team



УНИВЕРЗИТЕТ У БЕОГРАДУ
UNIVERSITY OF BELGRADE



Mr. Branislav Aleksić



Dr. Maria Espona



Project: 101059534 — PFAS^{twin}
HORIZON-WIDERA-2021-ACCESS-02



Funded by the European Union



Thank you for your attention!

Калемегдан (Belgrade Fortress) "Keep your chemistry peaceful"