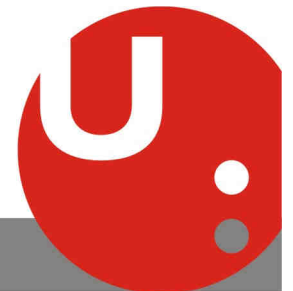


# EDUCATION AND TRAINING FOR EXPLOSIVES SPECIALISTS IN THE CZECH REPUBLIC

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Fak

Fakulta zdr

Faculty of Chemical Technology

aurování

Institute of Energetic Materials

Chemistry and Tech

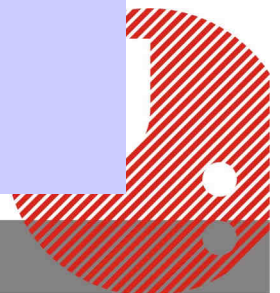
Safety Engineering Group

ics of Explosion Group



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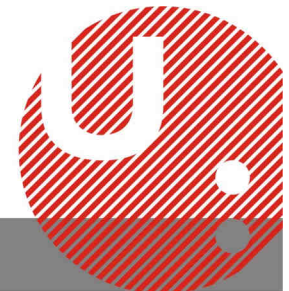
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- Civilian Subsector
  - Legislative environment
  - Requirements of Law No. 61
  - Education and Training
- Non-civilian Subsector
  - Legislative environment
  - Education and Training
- Concluding Remarks



# Introduction

## Long Tradition of Explosive Industry

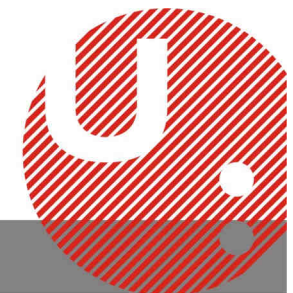
- Big factory manufacturing explosives was established close to Pardubice in the twenties of the 20th century. The factory still exists.
- Two existing producers of ammunition are even older.
- And there are more other factories in the sector in the Czech Republic.



# Introduction

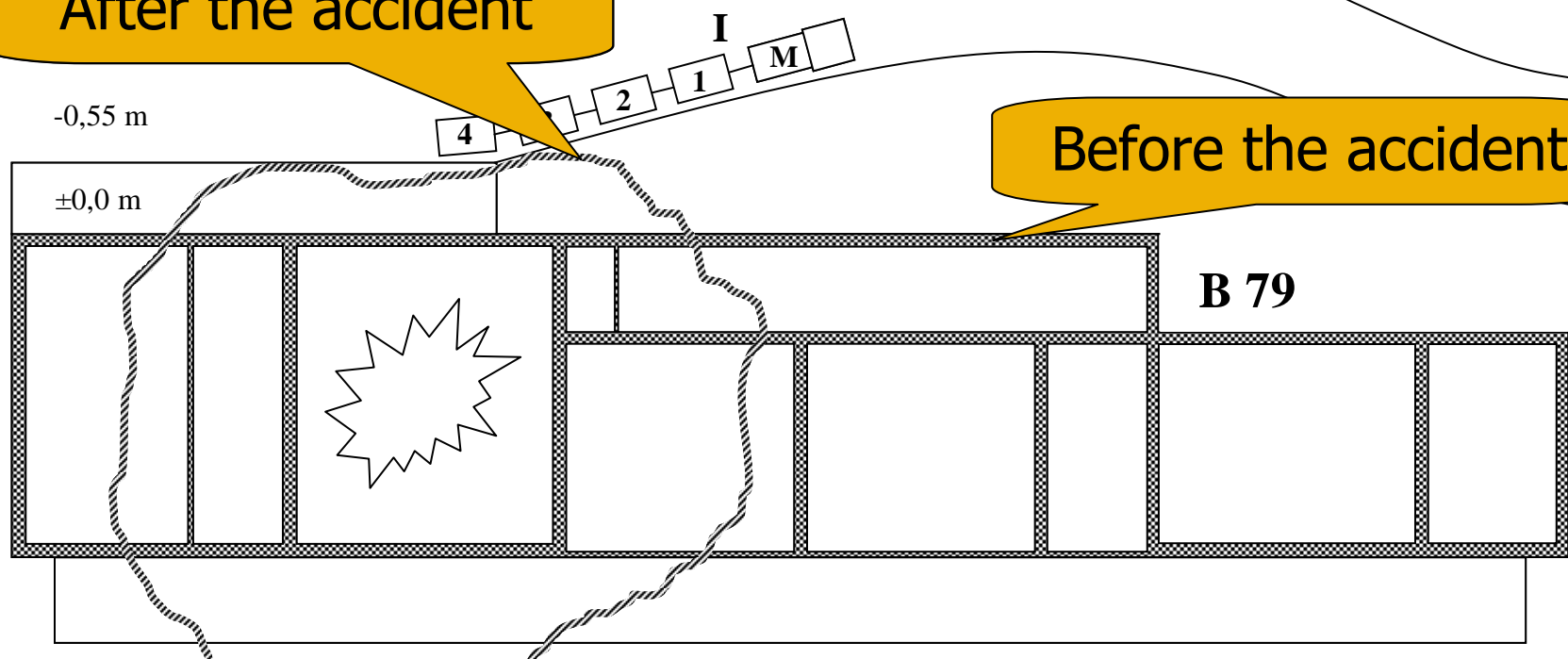
## Situation in the Eighties

- The existing ability and expertise was exploited by communist regime after the WW2.
- Production of the sector was exceedingly high in the eighties of the 20th century.
- But series of accidents in the eighties showed that safety of production is more and more behind the times.
- The biggest **accident** occurred in **May 1984** in the factory at Pardubice.

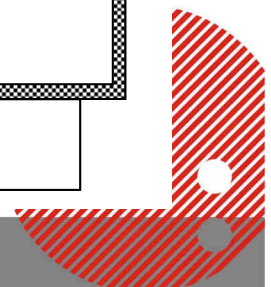




After the accident



Before the accident

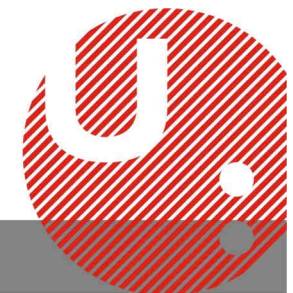




# Introduction

## Basic Legislation in the Field

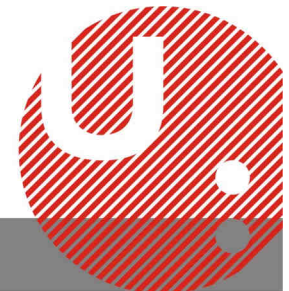
- The accident operated as impulse strong enough for large improvement of existing legislature even under communist control.
- In 1988 a new law **No. 61/1988** was introduced into our legal system.
- The law is (with many corrections and amendments) valid up to our days.
- English version of the law is accessible at <http://www.cbusts.cz/docs/zakon1988-061en.doc>



# Introduction

## Czech Legal System

- Czech legislation knows **laws** and **decrees**.
  - Laws are given out by Parliament.
  - Decrees are given out by state authorities that are entitled in the laws.
  - Decrees describe details of implementation of relevant laws.
- Czech legal system is very similar to Slovak one.

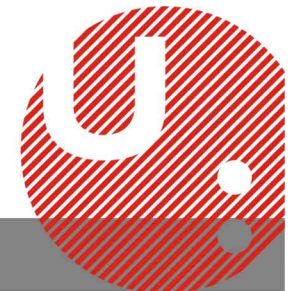




# I will divide my explanation into civilian and non-civilian parts:

Situation in the civilian subsector is transparent.

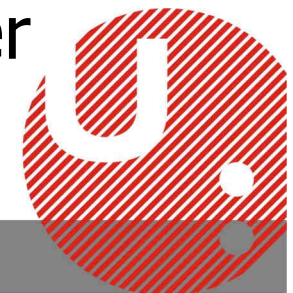
Situation in the non-civilian subsector is not clearly arranged.



# Civilian Legislation

## Laws Regulating the Explosive Sector

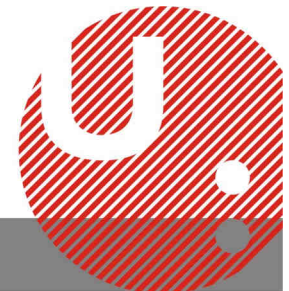
- No. 455/1991 Trade Law
  - The law defines **licensed trades** i.e. trades for which licenses have to be granted by defined state bodies after demonstration of professional and other special competencies.
  - The law names the activities with explosives as licensed trades.
  - Specifies required professional and other special competencies for them.



# Civilian Legislation

## Laws Regulating the Explosive Sector

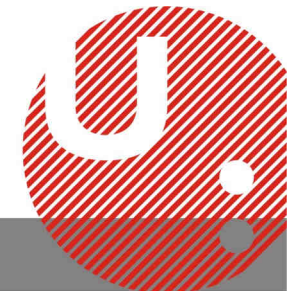
- No. 455/1991 Trade Law (cont.)
  - specification of competencies refers to two laws: No. 119/2002 and No. 61/1988.
- No. 38/1994 Law on Foreign Commerce in Military Material
  - The law specifies certain special conditions for persons performing these activities but does not specify any professional competencies.



# Civilian Legislation

## Definition of Competencies

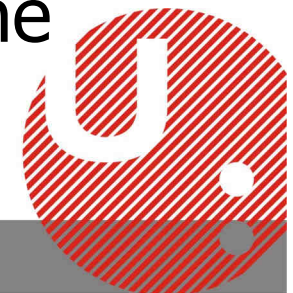
- Just only **two laws define the level** of education, training and certification necessary for work in the explosive sector:  
**No. 119/2002 and No. 61/1988**
- No. 119/2002 Weapon and Ammunition Law
  - The law defines different types of arms certificates.
  - Among them the arms certificate F – for performance of pyrotechnical survey.
  - The law describes the certification procedure.
  - It is relevant only for minor group.



# Civilian Legislation

## Definition of Competencies

- No. 61/1988 Law on Mining Activities, Explosives and the State Mining Administration
  - The law defines the level of education, training and certification necessary for work in the majority of the Czech civilian explosive sector.
  - The law constitutes the Czech Mining Authority as the regulatory body over the production and civilian application of explosives.



# Requirements of Law No. 61/1988

## Introduction, Article 34

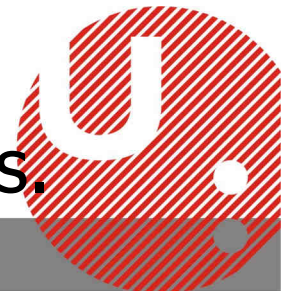
- Competencies of persons handling the explosives are described in Articles 34 to 36:
- Article 34 defines general competence:
  - Explosives may be handled only by persons who are over the age of majority, without a criminal record, in good health, and with professional competence.  
... The professional competence of employees for handling explosives, except for activities mentioned in Article 35, shall be assessed by the organization with which they have a working or similar relationship.



# Requirements of Law No. 61/1988

## Articles 35 and 36:

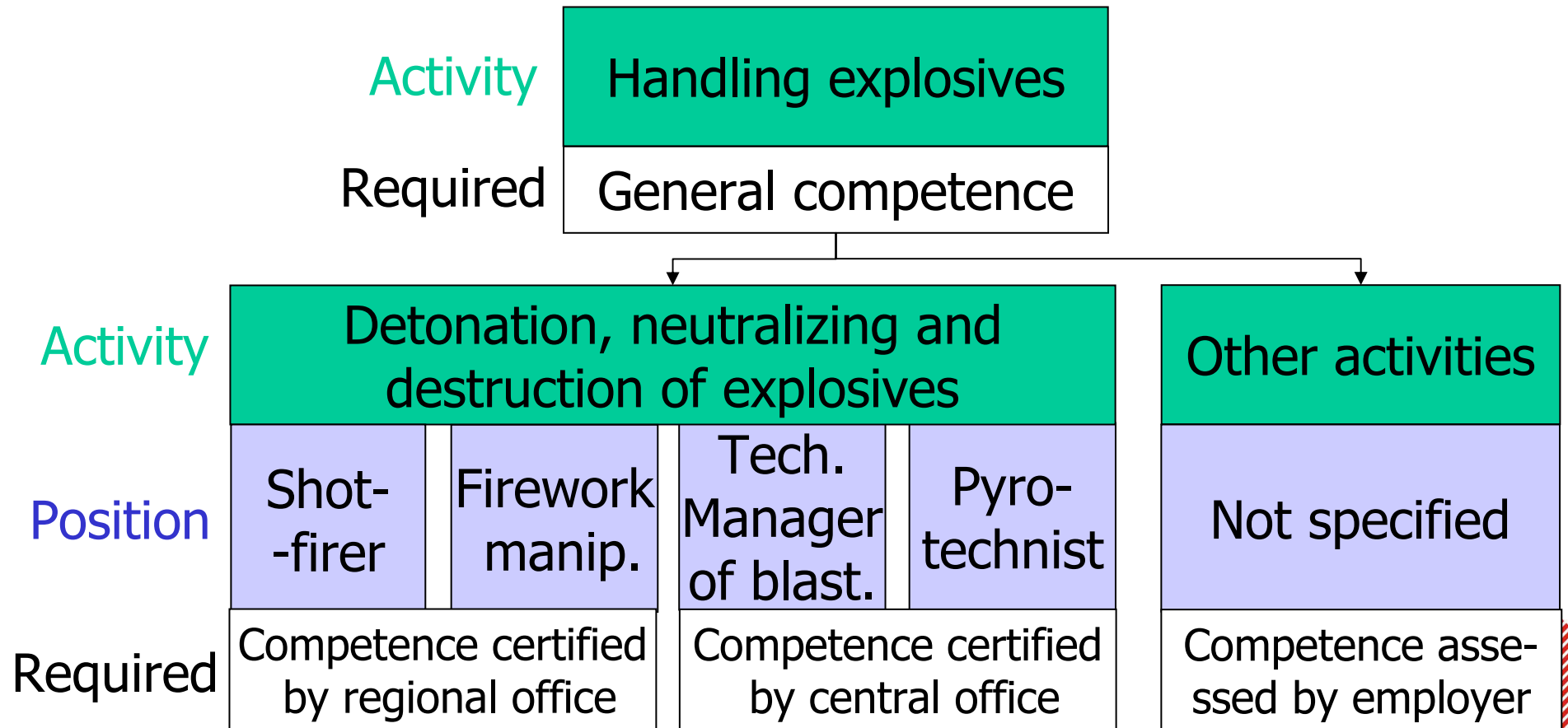
- Article 35 requires authorization for persons who may carry out detonation, neutralizing and destruction of explosives.
  - Only persons authorized as  
shot-firers,  
technical managers of blasting,  
firework manipulators and  
pyrotechnists  
may carry out detonation, neutralizing and  
destruction of explosives.
- Article 36 describes certification procedures.





# Requirements of Law No. 61/1988

## Scheme of competence regulation:



# Requirements of Law No. 61/1988

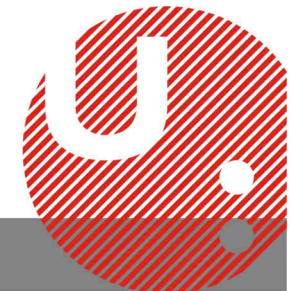
## Decrees Describing Details:

Detail specification of required competencies, education and training

- for persons handling explosives in **blasting operations and in the neutralizing and destruction of explosives** in the process of manufacture and processing of explosives (shot-firers, technical managers of blasting, firework manipulators and pyrotechnists)  
is in the No. 72/1988 Decree on Use of Explosives.

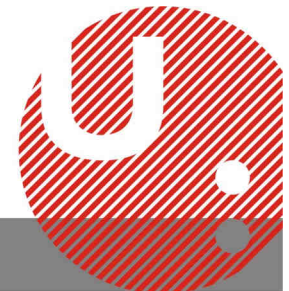
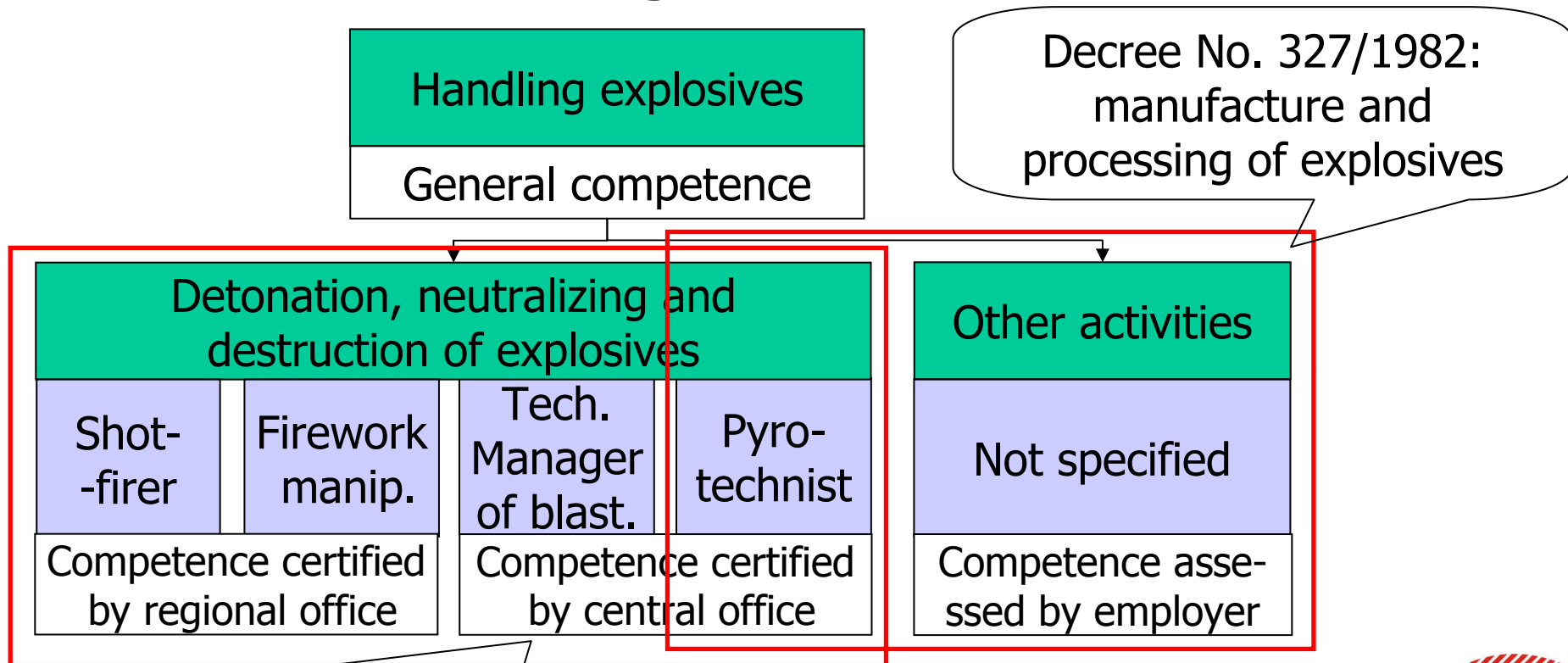
- for employees in the **manufacture and processing of explosives** (pyrotechnists and everyone who manages, organizes, checks or performs works with explosives)

is in the No. 327/1982 Decree on Safety and Health at Manufacture and Processing of Explosives.



# Requirements of Law No. 61/1988

## Coverage of Activities:



- Decrees No. 72/1988 and No. 327/1982 describe in detail
  - content of training and education,
  - its duration,
  - examination procedure.
- Students have to be recommended by organizations.

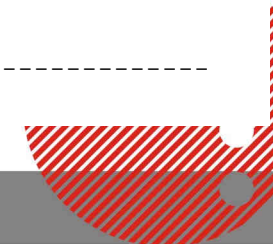
3. Učební osnova "C"  
Poř. č. Téma výuky

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I	Psychologická příprava	
II	Bezpečnostní předpisy a normy, doplnění základních znalostí pro práci s výbušninami	
III	Základní prostředky trhací techniky a pomůcky pyrotechnika. Rozněcovadla a náložky. Pyrotechnické kleště, roznětnice a ohmmetry	
IV	Zápalnice a její použití. zažehování a zkoušení, adjustace zápalnice - rozbuška. Zkouška účinku rozbušky	
V	Ničení volných výbušnin pálením a výbuchem	
VI	Ničení zbytku výbušnin ve výrobním zařízení	
VII	Ničení zbytku výbušnin v místech nepřístupných pro mechanické a chemické čištění	
VIII	Adjustace zápalnice - rozbuška - náložka. Přenos detonace. Sestava nálože	
IX	Elektrický roznět. Praktická příprava a provádění elektrického roznětu včetně kontroly roznětného vedení, práce s ohmmetrem a roznětnicí. postup při likvidaci selhávek a el. roznětu	
X	Ničení iniciátorů a drobné munice, jednotlivě-hromadně	
XI	Ničení velkorážových nábojů, jednotlivě-hromadně	
XII	Ničení signální munice, jednotlivě-hromadně	
XIII	Dělostřelecké střely a náboje. Ničení jednotlivě-hromadně	
XIV	Ruční granáty. Ničení vadných a selhaných, práce pyrotechnika na házištích	
XV	Zapalovače střel, zápalkové šrouby. Principy základních typů a jejich konstrukční zvláštnosti se zřetelem na bezpečnost při manipulaci. Ničení jednotlivě-hromadně	
XVI	Raketové střely. Zásady ničení	
XVII	Ničení ženižních min a leteckých pum	
XVIII	Postup pyrotechnika při ničení munice neznámé nebo podezřelé	
XIX	Doplňující přednášky	
XX	Příprava k závěrečným zkouškám	

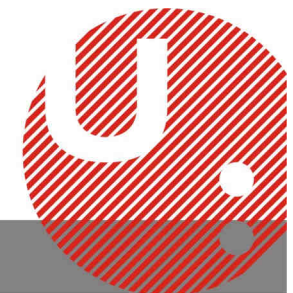
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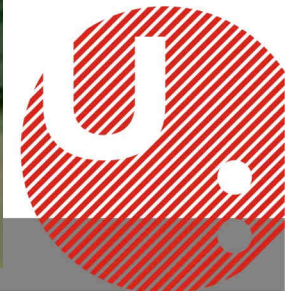
# Civilian Education and Training Institutions

- Production and/or application of explosives are parts of teaching
  - at the University of Pardubice, Institute of Energetic Materials (IEM), and
  - at the Ostrava Technical University, Faculty of Mining and Geology.
- Another training centre is the Vocational Institute of Special Techniques (OIST) established at the Engineering Plants at Polička.



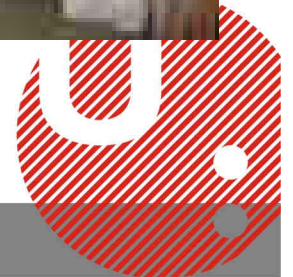
# Civilian Education and Training Aerial View of Facilities of the IEM

[www.upce.cz](http://www.upce.cz)



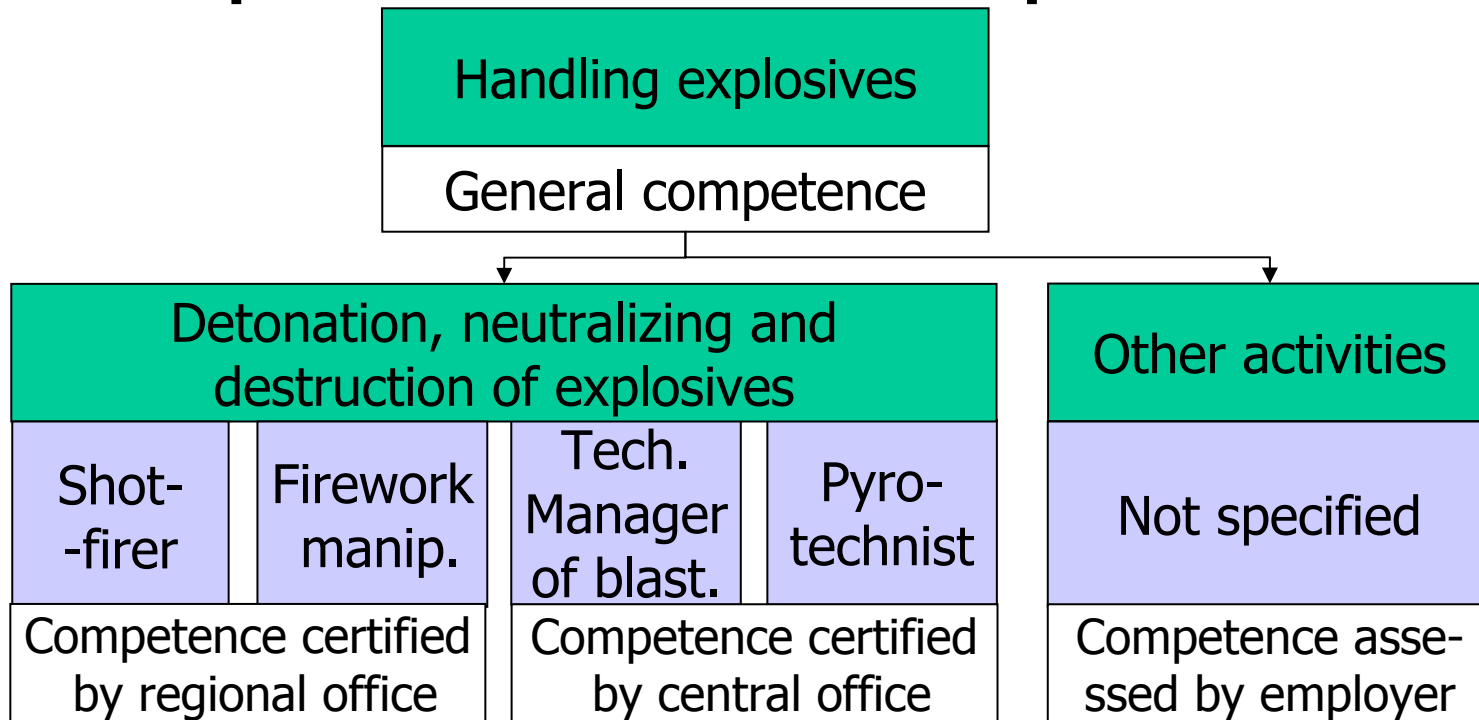
# Civilian Education and Training Institute of Special Techniques (OIST)

[www.pos.cz](http://www.pos.cz)





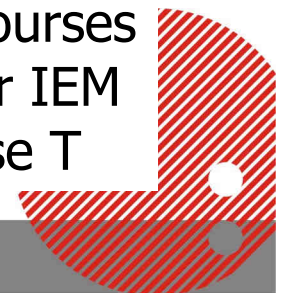
# Civilian Education and Training Preparation for Competence



OIST special courses  
or IEM MSc. or IEM  
license course B

OIST special courses  
or IEM MSc. +  
additional courses

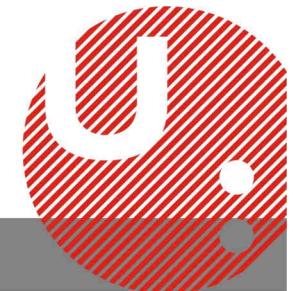
OIST special courses  
or IEM MSc. or IEM  
license course T



# Non-civilian Legislation

## Czech Army

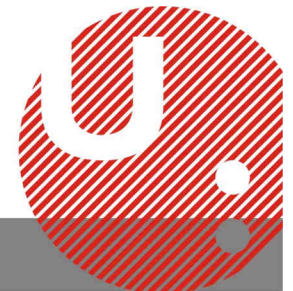
- No. 219/1999 Law on Armed Forces of the Czech Republic
  - Part six of the law is devoted to training of armed forces. However, the training in the field of explosives is defined by internal documents.
  - At least three specializations are trained in the Army of the Czech Republic: [pyrotechnists](#), engineers and warehousemen.



# Non-civilian Legislation

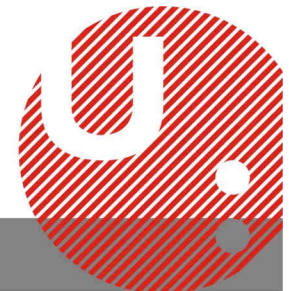
## Czech Police

- No. 283/1991 Law on Police of the Czech Republic
  - Article 23 of the law states that policemen are entitled to use explosives and explosive articles in connection with assurance of security of persons and protection of property.
  - Police **pyrotechnists** are trained to fulfil these tasks.



# Non-civilian Education and Training Institutions

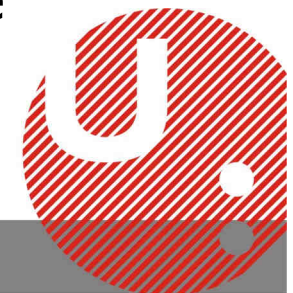
- University of Defence, Brno
- Police Academy of the Czech Republic, Praha
- Police and army bodies of the Czech Republic have their own training centres that do not come under the competence of the Czech Mining Authority.



# Non-civilian Education and Training

## Preparation for Competence

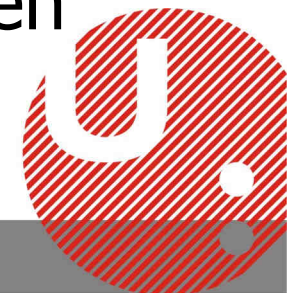
- Army:
  - Training of pyrotechnists follows internal document and is performed in training centre at Libava.
  - Training of engineers follows internal document and is performed in training centre at Vyškov.
  - Training of warehousemen follows internal document.
- Police:
  - Training of police pyrotechnists follows internal instruction.
  - The instruction describes certification procedure and specifies content of relevant training courses.
  - Basic course is performed in facilities of the Army of the Czech Republic.
  - Specialized courses are performed in police facilities.



# Concluding Remarks

## Civilian Subsector

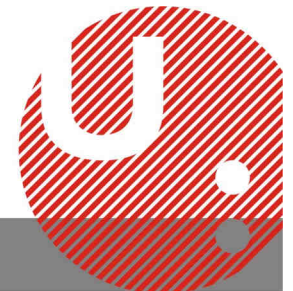
- Competencies, education and training are defined in the Czech legislation for all key persons.
- Requirements are not based on task analysis. They reflect necessary skills but sometimes requirements are general and formal.
- Education and training of persons not covered by the law is required but its content and duration is result of interaction between employer and regulator.



# Concluding Remarks

## Non-civilian Subsector

- Substantially different situation is outside the Czech civilian sector, in the army and police:
- There is **no law-based obligation** connected to the competence.
- There is **no regulatory body** on the subject.





# Concluding Remarks

## Non-civilian Subsector

- I am not able to compare situation in our army and police with the situation in old democracies of the EU.
- I can only state:
  - It is clear that some competences are required in the army and police.
  - Some education and training system exists, also some relevant institutions.
  - The education/training seems to be in accordance with Czech law No. 61 system.





Thank you for your attention!

