

# Mutual Joint Visit Workshop for Seveso Inspections on Risk management and enforcement for ageing sites

## Emergency control systems on ageing sites



### Speaker:

Taras Polishchuk – head of  
Technogenic Safety Division,  
Department for emergencies  
prevention, State Emergency  
Service of Ukraine

# Sites and equipment ageing

There are more than  
9 000 high risk sites in Ukraine, among which:

655 chemical hazardous sites

200 000 tonnes of  
hazardous chemical  
substances

3 000 t. of chlorine

38 000 tonnes of other  
hazardous chemical  
substances

175 000 t. of ammonia

## Sites and equipment ageing

Major part of metal elements of these sites has been in operation for more than 40 years

Industrial equipment of these sites has undergone physical ageing for 10-25 %

Serious hazard comes from the abandoned enterprises with failed equipment or from the bankrupted enterprises which don't ensure proper control over the equipment.  
Ageing of this equipment is rapidly growing.

# Sites and equipment ageing

## MORAL AGEING

**Functional –**  
requires adjusting  
constructional changes due  
to the availability of new  
materials, up-to-date  
equipment, technical  
maintenance methods

**Technological –**  
featured with loss of decrease  
of equipment reliability due to  
changes of production  
technology, use of other raw  
materials, technological  
environment (temperature,  
pressure, aggressive  
substances)

**Operational –**  
caused by the differences  
between productive  
specifications of the obsolete  
equipment and needs for  
production enhancement  
without replacement  
(modernization) of available  
equipment

## PHYSICAL AGEING

loss of equipment original strength (reliability), which is caused not only by its operation, but also by inactivity of equipment (destruction from external, atmospheric influence, corrosion)

# EMERGENCY CONTROL SYSTEMS

## EMERGENCY CONTROL SYSTEMS

"human-machine" automated systems, where the processes of automated collection of information on the facility hazard state are combined with warning of the operating personnel of the hazardous facility and responsible persons, state authorities, local self-government, emergency rescue services and population by the human operator.

**Compulsory equipment of high-risk  
objects**

**EMERGENCY CONTROL SYSTEMS**

**stipulated by**

**CODE of Civil Protection of Ukraine**

**Requirements for  
EMERGENCY CONTROL SYSTEMS**

**established by**

**STATE CONSTRUCTION NORMS  
“B.2.5-76:2014”**

# EMERGENCY CONTROL SYSTEMS

## **At chemical hazardous sites**

concentration in air of gaseous hazardous chemicals (chlorine, ammonia, etc.);

meteorological conditions: wind direction, air velocity, air temperature;

level (amount) of hazardous chemicals in reservoirs, equipment, devices;

leakage of hazardous chemicals ;

pressure and temperature in reservoirs, equipment, apparatus, pipelines



# EMERGENCY CONTROL SYSTEMS



## **At explosive sites**

concentration of explosive substances and mixtures in the air;

level (amount) of explosive substances (mixtures) in tanks, equipment, devices;

leakage of explosive substances;

pressure, temperature of explosive substances (mixtures) in reservoirs, equipment, devices;



# EMERGENCY CONTROL SYSTEMS



## **In the areas with the risk of natural disasters**

parameters of the state of foundations and supporting structures of buildings and constructions;

integrity and relative measurements of geometric parameters of roofs;

relative measurements of geometric parameters of locations;

groundwater state and soil stability.





# About aging of EMERGENCY CONTROL SYSTEMS

## Composition of sulfur at the Eastern ore mining and processing enterprise in Zhovty Vody

Previous  
EMERGENCY  
CONTROL  
SYSTEM ensured  
control over the fire



New EMERGENCY  
CONTROL SYSTEM  
in automatic mode controls  
rising of sulfur dioxide  
concentration  
which is formed during its  
heating, at the early stage  
stage before its ignition

# About aging of EMERGENCY CONTROL SYSTEMS

## Enterprises for ammunition disposal

Previous  
EMERGENCY  
CONTROL  
SYSTEM ensured  
control over the fire

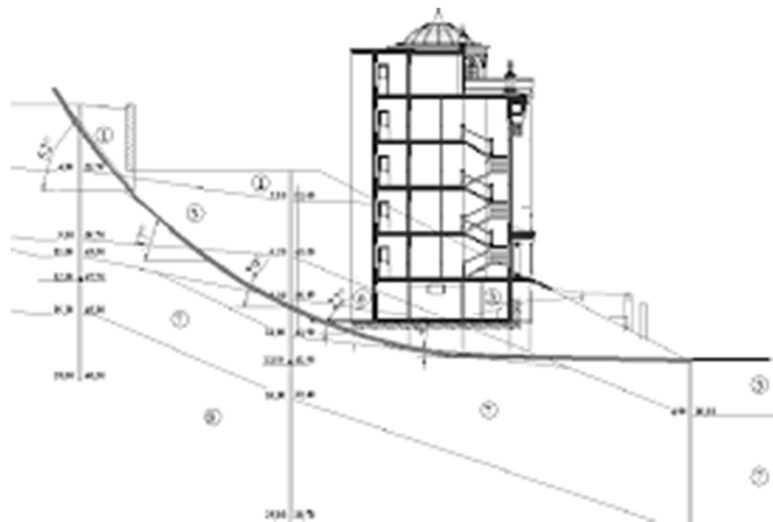


New EMERGENCY  
CONTROL SYSTEM  
in automatic mode controls  
- air humidity;  
- fact of ground braking;  
- early stage of the fire

# About aging of EMERGENCY CONTROL SYSTEMS

## In the areas with the risk of natural disasters

Instrumental monitoring of the physical stability of the object's construction using geodetic instruments



New EMERGENCY CONTROL SYSTEM in automatic mode controls

- subsidence of earth surface;
- transmission of distress messages in case of subsidence of earth surface;
- emergency warning of enterprise personnel and population in case of real threat of object destruction

# CONCLUSIONS

In Ukraine almost 70 % of industrial objects' premises have been operating from 40 to 50 years and are to be compulsory equipped with  
**EMERGENCY CONTROL SYSTEMS**

Objects, equipment and **EMERGENCY CONTROL SYSTEMS** have the same ageing stages in terms of time and resources, among which physical ageing is dominating in Ukraine

**EMERGENCY CONTROL SYSTEMS** may quickly become obsolete due to changes in instrumental base and software

Thank you for attention!

