



**The Ministry of the Russian Federation for Civil Defense,  
Emergencies and Elimination of Consequences of  
Natural Disasters  
(EMERCOM OF RUSSIA)**

**THE ORGANIZATION OF SCIENTIFIC-TECHNICAL ACTIVITIES  
IN THE SYSTEM OF EMERCOM OF RUSSIA**

**Report by the Head of section of the Scientific - Technical Department  
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**2018**

## Research institutions in the system of EMERCOM of Russia



**All-Russian Research Institute on  
problems of civil defense and  
emergency situations  
(Federal Centre for science and  
high technology)**



**All-Russian order "Badge of Honor"  
Research and Development  
Institute for fire protection**



# Higher educational institutions of system of EMERCOM of Russia



**Civil Defense Academy**

**State Fire Service Academy**



**St. Petersburg State Fire Service University**



**Ivanovo State Fire Service Academy**



**Siberian State Fire Service Academy**



**Ural State Fire Service Institute**

# The stages of development of the Research Institute on problems of civil defense and emergency situations



**Stage I . 1976-1985.** Establishment of the Institute in 01.12.1976 and scientific research in the protection of the Soviet economy in wartime.

**Stage II. 1986-1996.** Implementation of scientific researches not only in the field of civil defense, but also protection against emergency situations of natural and technogenic character. The transition of the Institute from the Ministry of Defense of the USSR in the system of EMERCOM of Russia.

**Stage III.** 1997-2009 Development of the Institute as a head of the scientific organization of Russia in the field of health and safety. Granting the Institute the status of "Federal center of science and high technologies".

**Stage IV.** 2009-2012. Development of laboratory-experimental base of the Institute, making scientific researches of innovative nature.

**Stage V.** 2012-2018. Integration of the Institute in the national and world scientific and educational community, the development of innovation activities of the Institute, improving the scientific basis and improve the quality of scientific and technical products in the field of civil defense and emergency

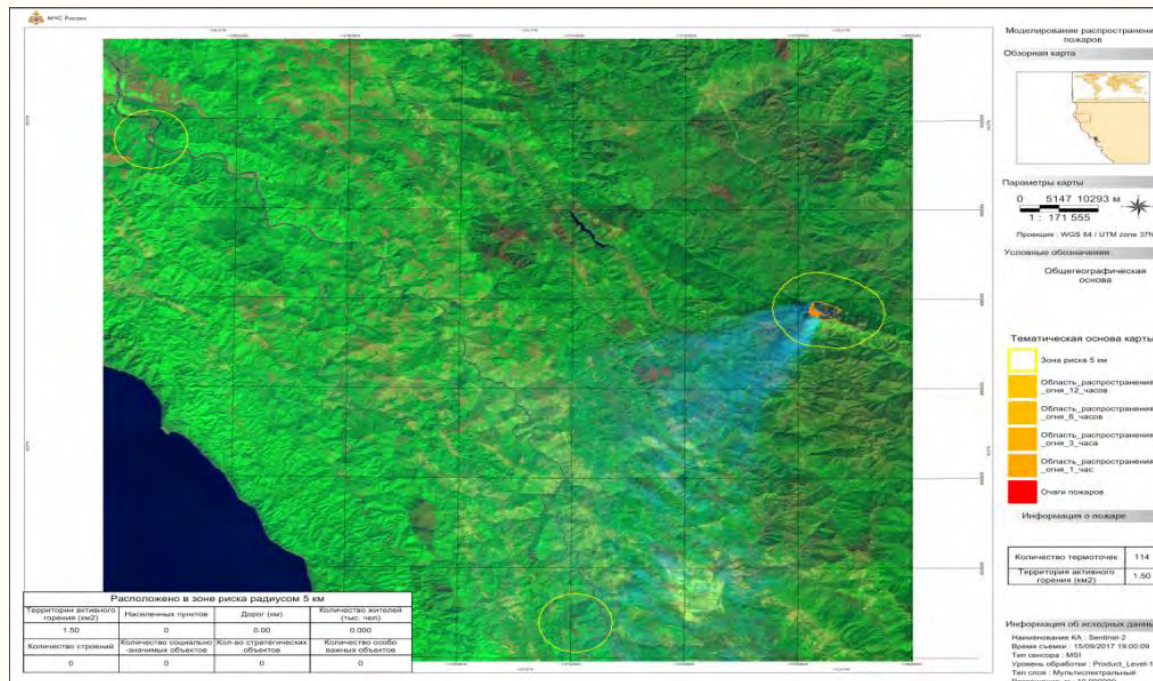
# **The main basic directions of research and development activities of the Research Institute on problems of civil defense and emergency situations in the period from 2012 to 2018.**



- 1.** • **Development of a General theory of security and applications methods of analysis and risk management emergency**
- 2.** • **Scientific and methodological support of state policy in the sphere of civil defense and protection of population and territory from emergency situations**
- 3.** • **Scientific, technical and information support of management of civil defense and the Russian unified system of prevention and liquidation of emergency situations**
- 4.** • **Scientific and practical support of legislative, legal and regulatory regulation in the field of civil defense and protection of population and territory from emergency situations**
- 5.** • **Scientific and methodical support of development of culture of safety**
- 6.** • **Technical and technological support of forces and means of EMERCOM of Russia**



# Implementation of space technologies for monitoring and forecasting of emergency situations in the period of 2012-2018.

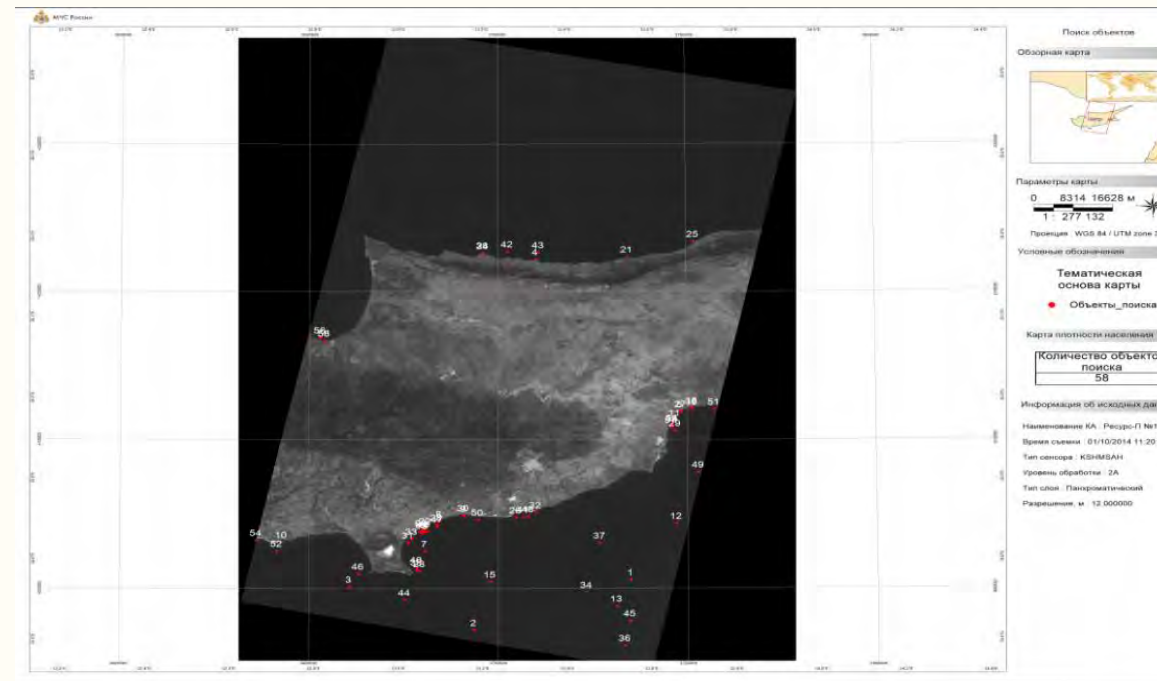


## Monitoring of wildfires

Accepted and processed more than **50 thousand** space images

**550 thousand** thermal anomalies in the territory of the Russian Federation and the nearest abroad are revealed

Increased group of domestic spacecraft for **more than 2 times**



## Search for objects in distress

Opening of the station in Murmansk joint with the Russian space Agency

Signed an agreement with Roscosmos

Joined the International Charter on space and major disasters



# The development of a system of monitoring and forecasting of emergency situations in the period of 2012-2018.

Every day, data from the Russian satellite group and foreign partners are used, and the GLONASS system is being implemented

Implemented automated software and hardware monitoring and forecasting of natural and technogenic risks and modeling of consequences

The Federal seismic surveillance system in the far East has been modernized.  
A tsunami warning system for Sakhalin and Kamchatka has been established, which has shown its practical significance



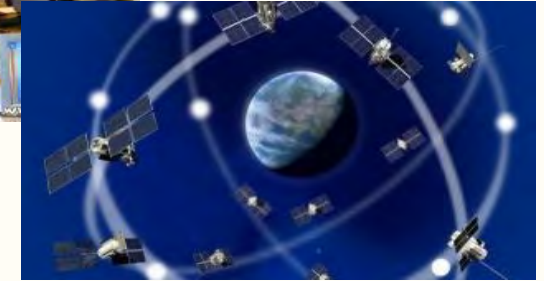


# Development of a system for crisis management

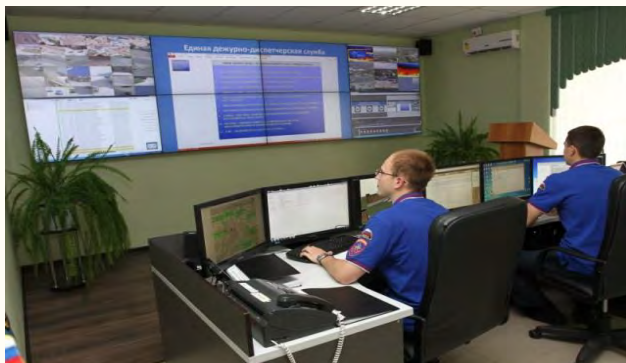


**Integrated risk assessments and integrated response systems have been introduced into the work of day-to-day management in determining the level of emergency response.**

**Development of the call system for firefighters and rescuers "101", "01", as well as the system "112" in the regions of the Russian Federation and municipalities.**



**Perspective automated information and control systems of decision support (information and reference, geo-information (including GLONASS resource), analytical, information and calculation, modeling the development of emergency scenarios) have been introduced into the practice of the operational services of everyday management bodies.**



**A systematic multilateral international mechanism for preventing and eliminating the consequences of man-made and natural disasters has been formed, and efforts are being made to promote Russian technologies in the field of crisis management.**

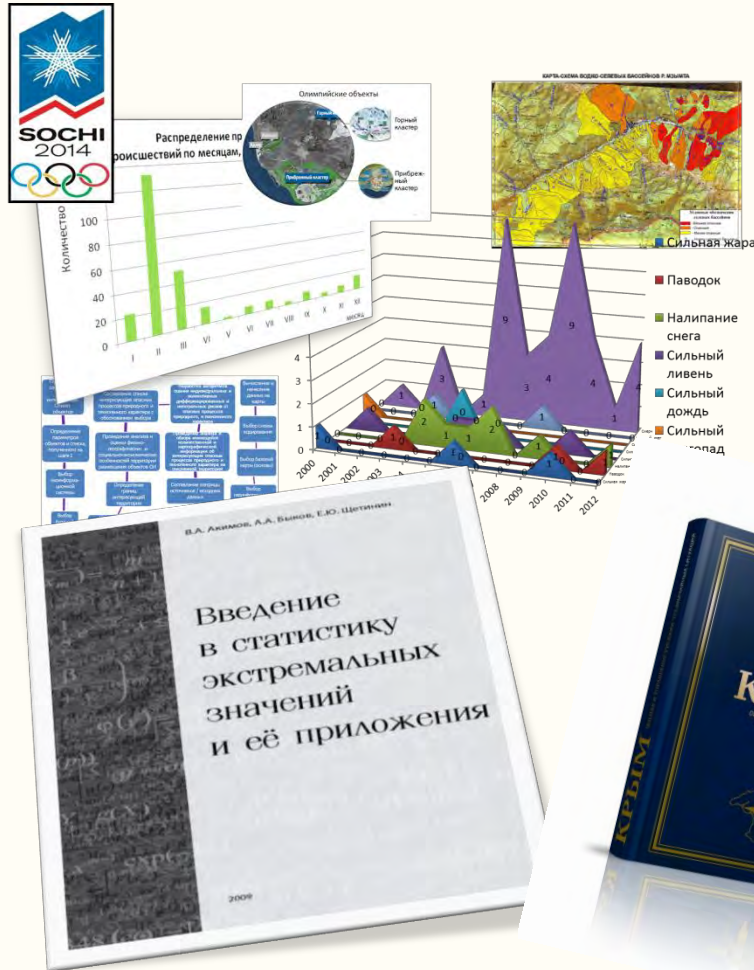


# Activities of the Research Institute on problems of civil defense and emergency situations for the development of a General theory of safety and applied methods of analysis and risk management in the period from 2012 to 2018.



Development of risk maps of objects and territories

The creation of software systems for risk analysis in Russia





# The activities of the Research Institute on problems of civil defense and emergency situations on scientific and technical and information support of management activity in the field of defense and protection against emergency situations in the period from 2012 to 2018.

Development of the automated information management system of the State system of prevention and liquidation of emergency situations, the system of providing emergency call services at a single number "112", Hardware and software complex "Safe city", a comprehensive system of emergency notification of the population. The development of the concept of development of system of the EMERCOM of Russia till 2030, the concept of development of system of communication, information and telecommunication technologies of the EMERCOM of Russia





# Activities of the Research Institute on problems of civil defense and emergency situations on scientific and methodological support of the formation of a culture of life safety in the period from 2012 to 2018.



## Developed:

- ✓ Public education programs in the field of civil defense and protection from emergencies
- ✓ Guidelines for the preparation of the Russian population in the field of civil defense, protection against emergencies, for 2016-2020
- ✓ Recommendations to territorial authorities of EMERCOM of Russia on formation of complex system of safety of activity
- ✓ Recommendations to specialists of EMERCOM of Russia on the organization of propaganda in the field of safety of activity
- ✓ National standards of the Russian Federation "Safety Culture"
- ✓ Training packages on the fundamentals of safety of activity for teachers and pupils 1 - 11 classes of schools
- ✓ A set of electronic manuals for the population and specialists of EMERCOM of Russia for actions in the threat and commission of terrorist acts
- ✓ Manual for the population "Civil defense and protection from emergencies"
- ✓ Training classes in the field of radiation safety
- ✓ Automated systems for monitoring population training in the field of safety of activity
- ✓ Complexes of mobile equipment training in the field of safety of activity



# Activities of the Research Institute on problems of civil defense and emergency situations on technical and technological support of activities of forces and means of EMERCOM of Russia in the period from 2012 to 2018.



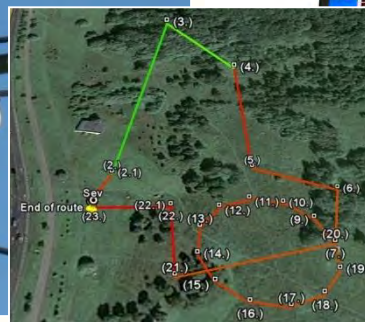
Anthropomorphic robotic complex  
"Lifeguard "



Engineering emergency multifunctional complex of doing specialized  
work  
in radioactive contaminated areas and facilities



Means of radiation intelligence-based UAV



Intelligence technology  
module,  
emergency rescue module





# Approved by Presidential Decree No. 696 of 20 December 2016 “The Basic state policy of the Russian Federation in the field of civil defense for the period up to 2030”

Ensuring the implementation of the Foundations of the state policy of the Russian Federation in the field of civil defense due to compliance with the following priorities:

improving the legal, regulatory, technical and methodological framework in the field of civil defense, taking into account the changes made to the legislative acts of the Russian Federation, and the introduction of the strategic planning system in the Russian Federation;

improvement of the civil defense management system, public warning and information systems on the dangers arising in military conflicts and emergency situations;

improvement of methods and ways of protection of population, material and cultural values against the dangers arising from military conflicts and emergency situations;

development of civil defense forces by improving their organization and preparation for use for the purpose, as well as by increasing the level of their equipment with modern special equipment;

improving the quality of training of the population in the field of civil defense;

development of international cooperation in the field of civil defense.



**Expected results of implementation of the Foundations of the state policy of the Russian Federation in the field of civil defense for the period up to 2030**

**Introduction of a differentiated approach to the protection of the population taking into account the risks and peculiarities of the regions**

**Bringing the provision of personal protection of the population and workers to 100 %**

**Bringing protective structures of civil defense in the subjects of the Russian Federation in full readiness**

**Build-up of the group of forces of civil defense by creating special formations of civil defense**

**Adoption of laws on civil defense in all constituent entities of the Russian Federation**

# Approved By The Decree Of The President Of The Russian Federation January 11, 2018 № 12 “Fundamentals of the state policy of the Russian Federation in the field of protection of population and territories from emergency situations for the period up to 2030”



**Ensuring the implementation of the Principles of the state policy of the Russian Federation in the field of protection of population and territories from emergency situations due to compliance with the following priorities:**

**improvement of the activities of the management bodies and forces of The Russian unified system of prevention and liquidation of emergency situations;**

**implementation of complex systems of ensuring safety of life activity of the population;**

**improving the level of protection of the population from emergencies and the introduction of modern technologies and methods for rescue operations;**

**involvement of public associations and other non-profit organizations in activities in the field of protection of population and territories from emergency situations;**

**implementation of risk-based approach in the organization and implementation of state supervision in the field of protection of population and territories from natural and man-made emergencies;**

**improvement of the legal framework in the field of protection of population and territories from emergency situations;**

**development of international cooperation in the field of protection of population and territories from emergency situations.**



**The expected results of the implementation  
Principles of the state policy of the Russian Federation in the field of protection of the population and territories from  
emergency situations for the period till 2030**

**The decrease in the number of emergencies for 6-8%**

**Reduction in the number of deaths in emergency situations on 12-14%**

**Reduction of economic damage caused by emergency situations on 8-10%**

**Improving the reliability of emergency forecasts up to 80%**





# INTERNATIONAL ACTIVITY



The Institute is the leading research Institute of the CIS member States in the field of protection against natural and man-made disasters

The Institute functions as the Directorate of the European centre for new technologies for managing natural and man-made risks of major disasters



The Institute is a member of the International Civil Defense Organization (ICDO)

The Institute coordinates the activities of research organizations of the Eurasian economic Union in the field of disaster management



The Institute GOCHS represents the Russian Federation in the technical Committee ISO 292 "Safety and sustainability»

# The History of the Research Institute on problems of civil defense and emergency situations



1937-the Central research Institute of fire-prevention defense.

1968 – the all-Union scientific-research and experimental-design Institute for fire protection.

1969 – the all-Union scientific research Institute for fire protection.

1992-all-Russian research Institute of fire defense.

1998 – Federal state institution "all-Russian research Institute for fire protection»

2011 – Federal state budgetary institution "all-Russian research Institute for fire protection»



In 1987, in its fiftieth anniversary, the Institute was awarded the order " Badge of Honor»



# **Research areas of Research and Development Institute for fire protection**



**Fire explosion hazard of substances and materials;  
Fire resistance, fire hazard and fire protection of building structures and materials;  
Simulation of fires in buildings and structures;  
Mass fires and phenomena accompanying them;  
Fire safety of electrical equipment and electrical products;  
Fire safety of objects with an oxygen-enriched atmosphere;  
Fire safety of technological processes and transport systems;  
Burning and quenching of metals;  
Fire safety of nuclear power plants;  
The safety of people in fires;  
The study and examination of fires;  
Fire alarm;  
Water, foam, gas, powder fire-fighting;  
Fire automatic;  
Fire engineering and equipment;  
Fire-technical armament and equipment of firefighters;  
Fire robotics;  
Legal, organizational, methodological and information support  
fire safety;  
Information and reference, software and telecommunication technologies in fire  
protection.**





# Scientific and technological achievements of Research and Development Institute for fire protection for the period 2012-2018.



## Scientific achievements in improvement of fire fighting, rescue and assistance technologies



Specialists of the Institute took part in the development of :  
more than **21** models of equipment, weapons and technologies,  
about **50** software products.  
**71** patents and certificates were obtained.



## Normative legal acts and normative documents in the field of fire safety



During the period from 2012 to 2017, specialists of the Institute took part in the development and improvement of the regulatory legal framework in the field of fire safety.

### In particular, they took part in the development of:

- technical regulations of the Eurasian economic Union “About requirements to means of ensuring fire safety and fire extinguishing”;
- Federal law “About service in FFS SFS and amendments to certain legislative acts of the Russian Federation”;
- 21 Federal laws on amendments to Federal laws "About fire safety" and "About voluntary fire protection”;
- 6 Federal laws on making amendments in the "Technical regulations about requirements of fire safety”;
- 22 resolutions of the Government of the Russian Federation;
- 31 state standards and 16 codes of practice.

# Scientific and technical potential of Research and Development Institute for fire protection



Currently, the Institute employs 21 doctors and 69 candidates of Sciences, which annually take part in implementation of more than 50 scientific-research and experimental-design work.



Developments of scientists of the Institute received recognition in our country and abroad that allows the Institute to represent interests of Russia in the international organizations:

- ☐ The international organization for standardization (ISO);
- ☐ The international electrotechnical Commission (IEC);
- ☐ The international Maritime organization (IMO);
- ☐ European Association of official laboratories for fire testing (EGOLF);
- ☐ Committee on technical alternatives to chlorofluorocarbon (NTOS) operating in the framework of the United Nations for the protection of the environment;
- ☐ The international Association "Fire safety and science" (IAFS);
- ☐ The international Association of heads of fire research organizations "Forum" (IACFRO "Forum»);
- ☐ The international Fund for traumatic stress in extreme situations (IFTSES), etc.;
- ☐ Scientists of the Institute take part in the largest international exhibitions and symposia held in our country and abroad (Germany, great Britain, France, Italy, Switzerland, Belgium, India, China, USA, Japan, etc.).





## Development of technologies for prevention, rescue, assistance in the period 2012-2018



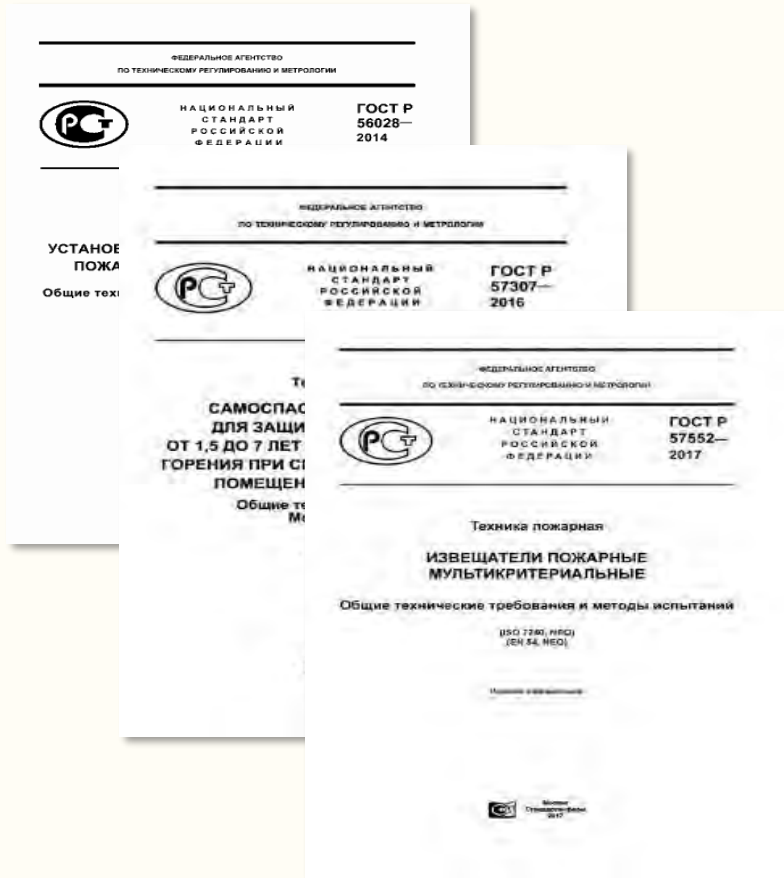
Fundamentally new high-tech samples of fire-technical weapons, rescue equipment of the new generation were obtained.

Modern models of unmanned aerial vehicles and robotic systems have been created, which are equipped with remote control systems and technical vision.





# Development and adoption of interstate standards and codes rules on fire safety in the period 2012 - 2018.



Developed, approved and updated **12** codes of practice in the field of fire safety

As part of the measures to prepare for the entry into force of the technical regulations of the Eurasian economic Union “About requirements for fire safety and fire extinguishing means of the EAEU TR 043/2017”, **more than 90** interstate standards in the field of fire safety have been developed since 2017



# Approved by the Decree of the President of the Russian Federation from 1 January 2018 number 2

## “Fundamentals of the state policy of the Russian Federation in the field of fire safety for the period up to 2030”

**Ensuring the implementation of the Principles of the state policy of the Russian Federation in the field of fire safety due to compliance with the following priorities:**

**updating the regulatory framework;**

**ensuring a qualitative increase in the level of protection of the population and fire protection facilities;**

**ensuring the effective functioning and development of fire protection;**

**development and implementation of the state scientific and technical policy in the field of fire safety.**

### The expected results of the implementation

**Principles of the state policy of the Russian Federation in the field of fire safety for the period up to 2030**

**Reducing the number of fires on 15%**

**The decrease in the number of fatalities in fires on 35%**

**Reduction of economic damage from fires on 35%**

**Reduction of administrative costs for audited organizations and citizens by at least 50%**



# INTERNATIONAL SALON OF SECURITY TOOLS “INTEGRATED SECURITY”







**THANK YOU FOR ATTENTION!**