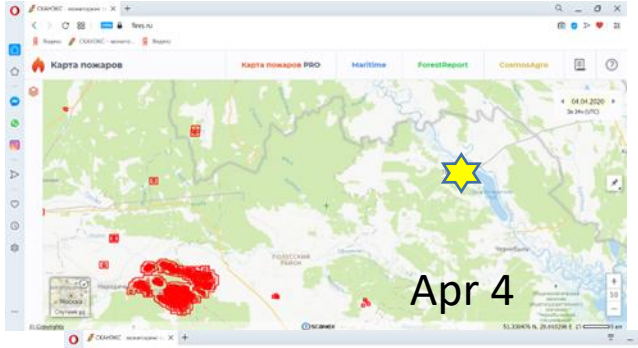
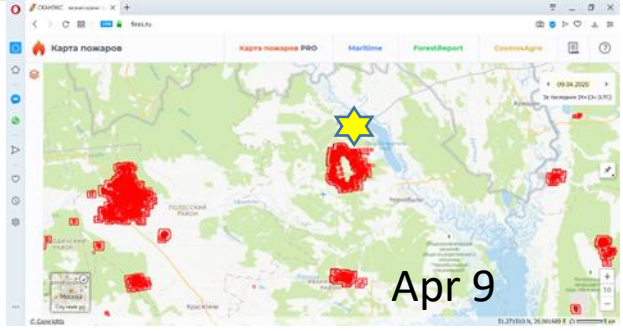
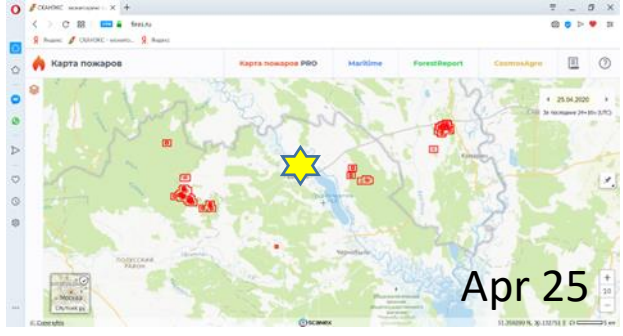
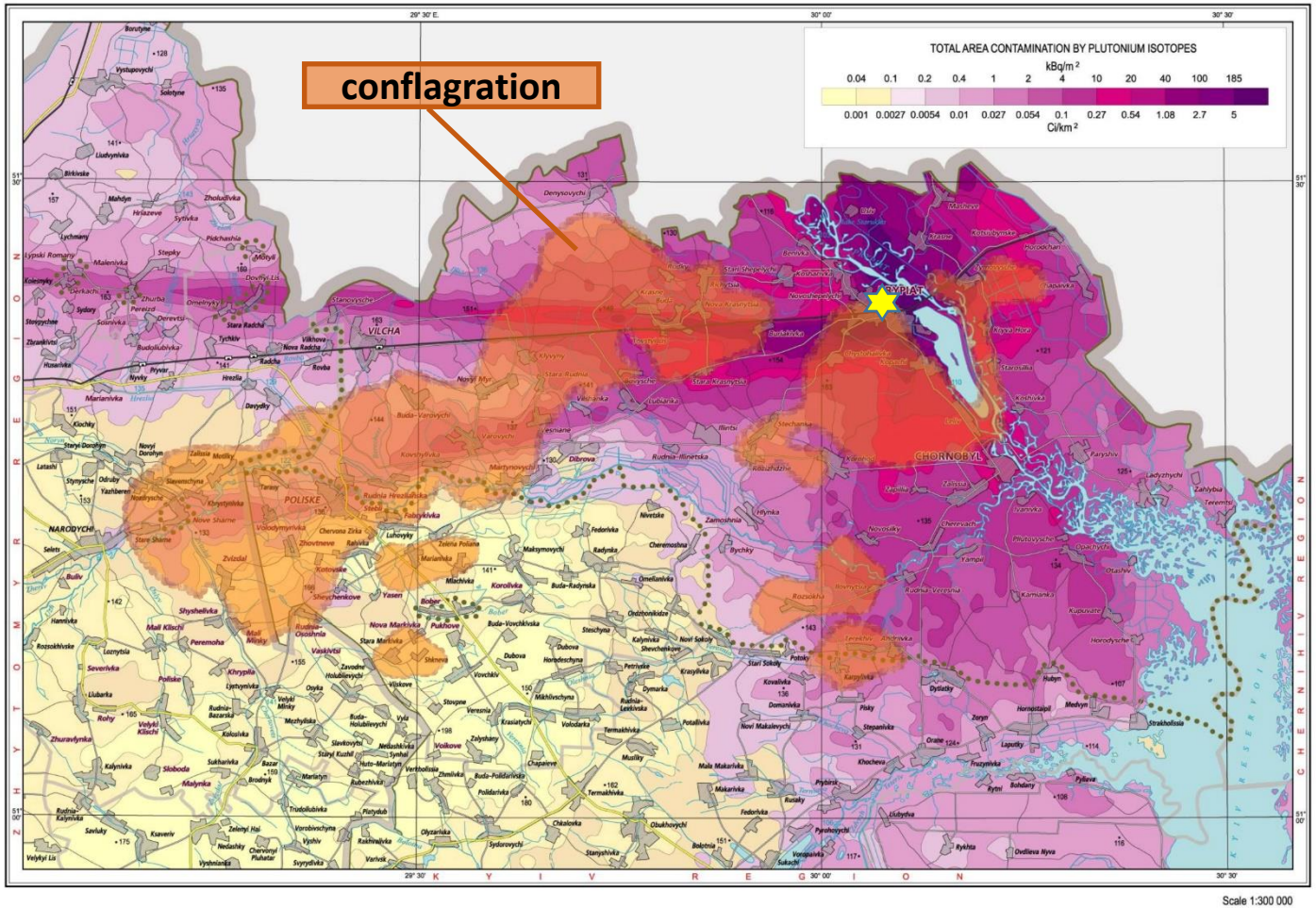
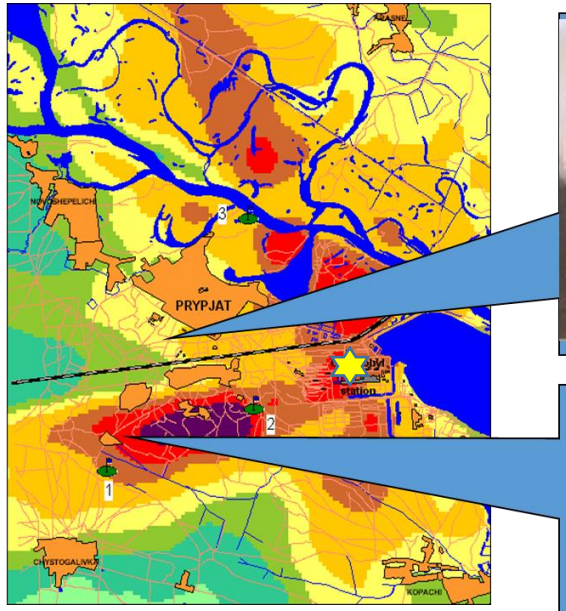




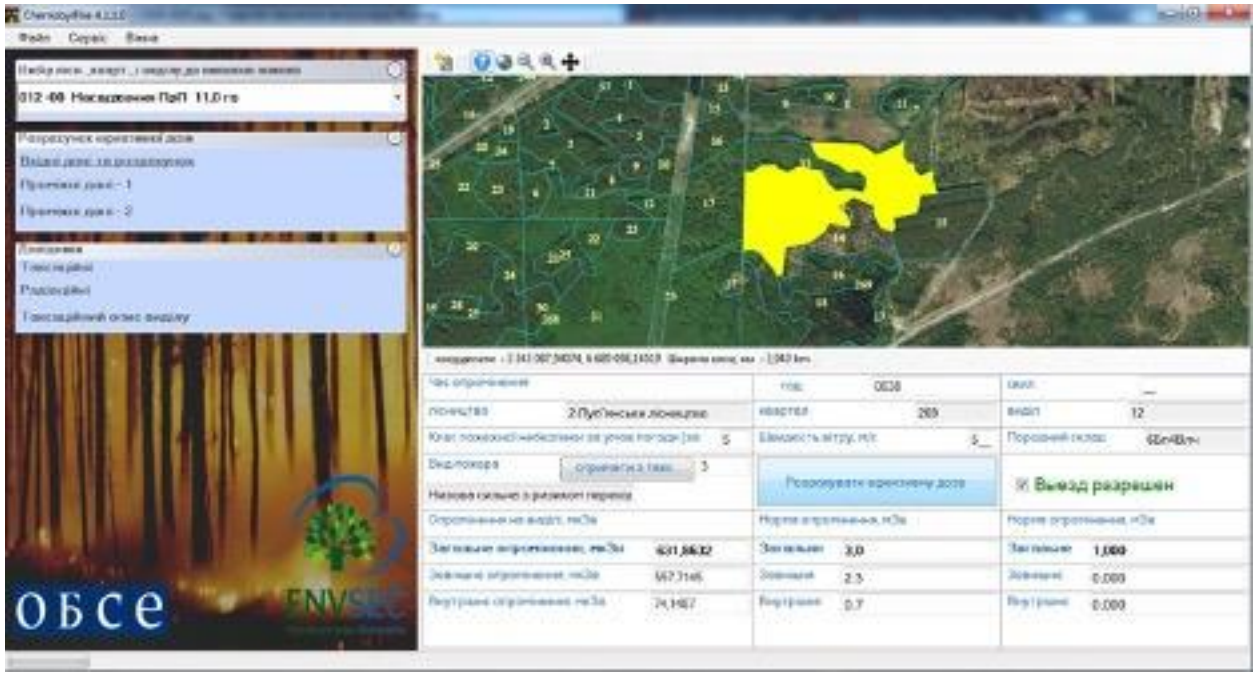


CONTAMINATION OF THE EXCLUSION ZONE BY PLUTONIUM ISOTOPES





Controlled burning of experimental plots of forest and grassland in the Chernobyl exclusion zone has been carried out in order to estimate the parameters of radionuclide resuspension, transport and deposition during forest and grassland fires and to evaluate the working conditions of firemen (1997-2004).



Global Fire Monitoring Center (GFMC)
Ukrainian Institute of Agriculture Radiology (UIAR)
National University of Life and Environmental Sciences of Ukraine (NUBiP of Ukraine)
Regional Eastern European Fire Monitoring Center (REEFMC)
Green Cross Switzerland

BEST PRACTICES AND RECOMMENDATIONS FOR WILDFIRE SUPPRESSION IN CONTAMINATED AREAS, WITH FOCUS ON RADIOACTIVE TERRAIN

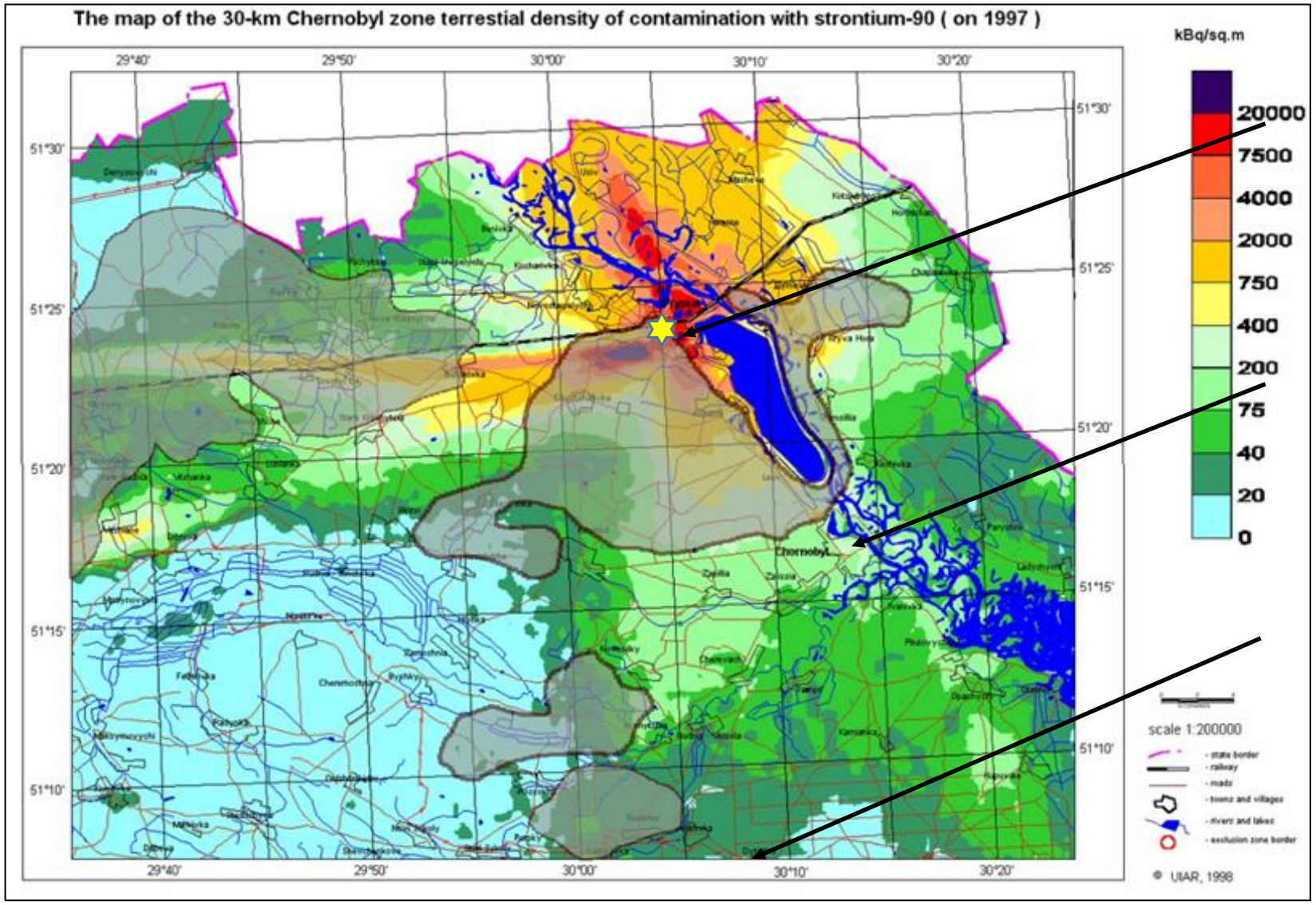
By:

***Johann Georg Goldammer**, Global Fire Monitoring Center (GFMC)*
***Valeriy Kashparov**, Ukrainian Institute of Agricultural Radiology, National University of Life and Environmental Sciences of Ukraine*
***Sergiy Zibtsev**, Regional Eastern European Fire Monitoring Center (REEFMC), National University of Life and Environmental Sciences of Ukraine*
***Stephan Robinson**, Green Cross Switzerland*

Freiburg – Basel – Kyiv – 2014

Commissioned by

OSCE Organization for Security and Co-operation in Europe



Maximum Airborne Activities – "Ecocentr" data

Near ChNPP

Apr-13:	^{90}Sr – 1.2 Bq/m^3; ^{137}Cs - 0.2 Bq/m^3
Apr 8-20:	^{90}Sr – 0.3 Bq/m^3; ^{137}Cs - 0.1 Bq/m^3

Chernobyl

Apr-11:	^{90}Sr – 2.4 mBq/m^3; ^{137}Cs - 2.6 mBq/m^3
Apr 8-20:	^{90}Sr – 0.5 mBq/m^3; ^{137}Cs - 0.4 mBq/m^3

Checkpoint ChEZ "Dutyatki"

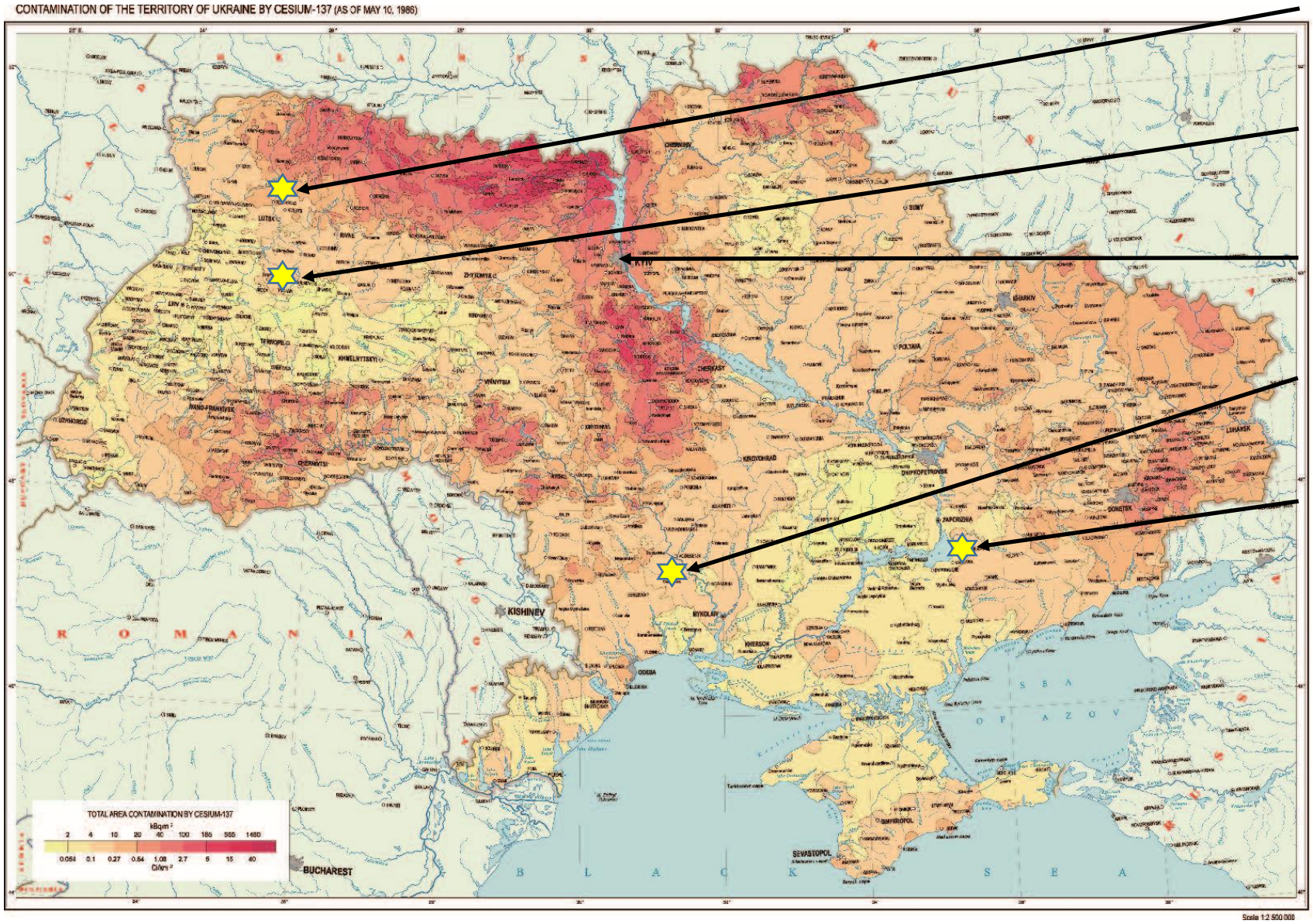
Apr 8-20:	^{90}Sr – 0.06 mBq/m^3; ^{137}Cs - 0.2 mBq/m^3

During the fires in the Red Forest

External dose rate, µSv/h	Effective internal dose via inhalation for workers during 1 h work, µSv/h					
	^{137}Cs (F, 5 µm)	^{90}Sr (S, 1µm)	$^{238-240}Pu$ (M, 1 µm)	^{241}Pu (M, 1 µm)	^{241}Am (M, 1 µm)	Σ
<10	<0.01	<0.5	<0.7	<0.2	<1.2	<2.5

Maximum of ^{137}Cs airborne activity in Ukraine

http://www.snrc.gov.ua/nuclear/uk/publish/article/460643



Rivne NPP
Apr-6-7: ^{137}Cs - 0.06 mBq/m^3

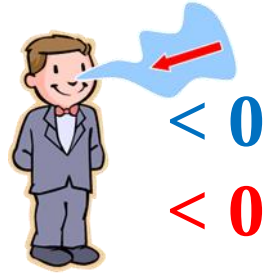
Khmelnytskyi NPP
Apr-6-7: ^{137}Cs - 0.04 mBq/m^3

Kyiv
Apr-9-11: ^{137}Cs - 0.7 mBq/m^3

South-Ukraine NPP
Apr-9-17: ^{137}Cs - 0.09 mBq/m^3

Zaporizhzhia NPP
Apr-13-22: ^{137}Cs - 0.03 mBq/m^3

^{137}Cs uptake & dose via inhalation



< 0.02 Bq/day

< 0.001 µSv/day

The source term uncertainty reduction during fire

needles, leaves, grass
< 2% ^{90}Sr & ^{137}Cs

Forest litter
5-50 % ^{90}Sr
1-40 % ^{137}Cs
< 1 % Pu & Am

The mineral part of the soil
20-60 % ^{90}Sr
40-99 % ^{137}Cs
>99 % Pu & Am

For different types of fire, forests and litter thickness, with the real actual distribution of radionuclides (Sr, Cs, Pu and Am) and humidity in it, etc.)