Chornobyl Radioactive Forest Fire Disaster Mitigation Action Needs

Forest fires potentially burning in the irradiated forests surrounding Chornobyl pose an extreme threat to Europe and western Asia.

260,000 hectares of contaminated lands including 139,000 of forests were irradiated with cesium-137, strontium-90, plutonium-238, plutonium-239+240 and other radioactive isotopes during the 1986 Chornobyl disaster. These are largely pine forests on sandy soils which have become overly crowded. A catastrophic fire, similar to those in Greece in 2007 and in the Inland Western United States during the past decade, is likely to occur—especially in the current multi-year cycle of dry weather in the region.

Small fires have occurred in the radioactive forests and been studied.[1] Results indicate that a large, intense fire could create and widely distribute much radioactive smoke in its intensive and expansive burning. If such a fire occurs, the wind could send radioactive smoke to Kiev or to the west, north, or east, depending on the weather patterns. Small fires occurring in the region reveal that the smoke particles which bring all abovementioned radionuclids are much smaller than radioactive dust, disperse farther, and filter less easily. Unlike the human skin that is somewhat resistant to radioactivity, and in particularly to most dangerous plutonium group - the lungs are highly susceptible. Radioactive smoke inhalation could result in health complications and societal problems.

The threat already exists. Though presently not widely known, the threat is highly likely to become widespread knowledge at some point. Such knowledge could seriously affect investments and prosperity in Kiev and other cities. It could also become a focal point for arsonists and terrorists.

Currently, the Ukraine fire fighting infrastructure is ill-equipped to stop large fires in the irradiated zone once started:

1. the fire detection system is outdated, and so fires can grow uncontrollable before detected;
2. the fire fighting equipment is outdated and poorly maintained, so fires can not be controlled before becoming catastrophic;
3. access roads are overgrown with trees, so fire fighters and equipment will have trouble getting to fires before they become catastrophic;
4. the forests are overly crowded and in need of thinning (removing some of the trees) both to make the remaining trees more healthy and less susceptible to fires and to reduce the rate of spread of fires.

The fire seasons usually starts April 1 and ends October 1 if no autumn drought occurs.

For the present year, an immediate input of equipment, trained personnel, and/or funds are needed to mobilize fire detection, fire fighting, access, and forest tending in the area.

For the long term, an estimated startup of $ 15 million and an annual budget of $ 20 million are needed. See budget on reverse side.

For more information and offers of assistance, please contact:

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[1] See See article by Dusha-Gudym at: http://www.fire.uni-freiburg.de/iffn/iffn_32/20-Dusha-Gudym.pdf ; and unpublished study by Hao, Bondarenko, Zibtsev, and Hutton. Lead author from USDA Forest Service, Fire Sciences Laboratory, Missoula, MT, USA.

[2] Following an international meeting in Kiev in July, 2007, Yale University was identified as the office for this effort until a more permanent office can be found.

(See also other side.)

Resources Needed[3]

A more accurate and specific budget needs to be developed; however, below is a rough estimate of operational needs and direct costs.

First year (March – July, 2008):

1. Money-- approximately $ 20 million to begin the program.
2. An administrative organization to handle and monitor outside funds and their deployment (E.g., the World Bank or the European Bank of Reconstruction and Development [EBRD])
3. Up to four feller-bunchers with trained operators to open access roads within the forest;
4. An emergency, rapid-response fire fighting unit of air (e.g., fire retardant) and ground equipment and trained personnel to attack fires before they become uncontrollable;
5. Fire detection equipment that can be immediately in place—towers with appropriate cameras or aircraft surveillance.
6. Personnel and equipment to cover the area for the first year

Continuous basis (every year, beginning in 2008):

Overall suggested budget:

Item	First year	Other years
Fire fighting infrastructure:	$ 3,200,000	$ 3,200,000
Forest Management Infrastructure		
Professional forestry staff	$ 2,000,000	$ 2,000,000
Landscape fire risk reduction plan:	$ 1,000,000	$ 200,000
Implementation of the plan:		
Road and fire break maintenance:	$ 600,000	$ 600,000
Thinning to reduce fire risk:	$ 4,000,000	$10,400,000
Monitoring:		
Scientific/technical:	$ 2,500,000	$ 2,500,000
Financial:	$ 500,000	$ 500,000
Transparency & display:	$ 500,000	$ 500,000
Insurance cover:	$ 800.000	$ 800,000
TOTAL	**$15,100,000**	**$ 20,700,000**

Notes:

Costs do not include extra safety precautions associated with these forests.
Costs do not (but should) include inflation adjustment.
Costs do not include overhead, start-up, contingencies for emergencies, and ongoing fees to reimburse administrative organizations.

[3] These numbers are rough estimate of direct costs, excluding overhead and interest on possible loans.

(See also other side.)