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Risk and Potential Implications of Forest and Grassland Fires in the Chernobyl Exclusion Zone

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A fire risk classification system based on stand structure and fuel loading was used in conjunction with a stand inventory to assess the wildfire risk in the Ukrainian portion of the Chernobyl Exclusion Zone (CEZ). The majority of the inventoried forest consisted of stands with a high risk of sustaining a crown fire**.** Subsequently, we assessed the potential implications of a wildfire burning under extreme conditions on populations living and working near the CEZ. We modeled a worst-case scenario in which it was assumed that a fire would consume the available fuels and release deposited radionuclides into the atmosphere. The complete model consists of a source model, a transport model, and an exposure model. The model was designed to be extremely conservative and to over-estimate potential exposure. The estimated exposure of populations 25 or more kilometers from the source of the fire is below the critical thresholds that would require evacuation under Ukrainian law. However, the response to the fire would require limiting ingestion of certain foodstuffs to avoid exposure via ingestion. Thus, although the risk of a high-intensity fire in the CEZ is high, the effects on human populations living adjacent to the zone can be readily mitigated.

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