The Environmental Impact of Wildfires

Intense fires cause chemical reactions that release metals, nutrients, and other toxicants into the soil. Then, when subsequent rains wash these contaminants into rivers and reservoirs, wildlife, agriculture, and human health can suffer harmful consequences. Monitoring and analyzing environmental conditions before, during and after wildfire events can help to manage their impact.

* Each year, global wildfires burn roughly 865 million acres of land
* Over 80% of all wildfires are started by humans.
* Climate change has been a key factor in increasing the risk and extent of wildfires

- Smoke is made up of volatilized matter (PM 2.5) as well as hydrocarbons, volatilize organic compounds, NOx, CO, CO₂, and NH₃. These particulates can be harmful to respiratory and cardiovascular systems and cause eye irritation.
- Emissions from wildfires can influence radiation, clouds, and the climate, including affecting snowmelt and storm runoff, build-up of ash, soil erosion, and possible chemical contamination due to fire retardants.
- Scorched hillsides impacted by rain/snow fall lead to mudslides that wash ash, debris, and toxicants into waterways.
- Flash floods cause significant erosion and can introduce high levels of heavy metals from ash, soils, and geologic sources into waterways.
- Toxic chemicals from burned materials (e.g., plastics, PVC, batteries) seep into soil and water.
- Drinking water is impacted by sediment runoff, introduced chemicals, and higher levels of heavy metals.
- Smoke can worsen air quality even thousands of miles away from the fire.
- Excessive nutrients can lead to bacterial and algal blooms that are harmful to humans and wildlife.

Copyright ©2021, PerkinElmer, Inc. All rights reserved. PerkinElmer® is a registered trademark of PerkinElmer, Inc.