

Gain Understanding of Shale Oil and Gas Development, Impacts, and the Tools to Help Mitigate the Effects of These Activities

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THIS SESSION FOCUSED ON THE GROWING INDUSTRY of hydraulic fracturing and natural gas development and its implications to parklands. In recent years, increasing overseas oil prices have prompted a boom in the U.S. natural gas and shale oil production. Such production is argued to be cleaner than coal and non-detrimental to ecological resources. This session focused on the unforeseen impacts of such activities and outlined cutting edge technologies that aim to mitigate these impacts.

The process of hydraulic fracturing involves drilling a deep narrow hole through the bedrock to deep shale deposits and forcing water laden with chemicals to fracture these deposits, eventually to be chemically weathered and pumped to the surface. Fracturing is often critiqued to lead to contaminating watersheds and inducing earthquakes. However, the presentation by Pete Penoyer about the true impact of fracturing outlined that if the process is done correctly watershed contamination is very rare, if not impossible, and indicated there has been little to no evidence that fracturing induces earthquakes. He did argue, however, that the lack of foresight into the process is the main cause for watershed contamination.

Fracturing is a particularly loud and bright process that is conducted mostly in wide open landscapes and generally away from densely populated areas. This makes parks most vulnerable to the negative factors associated with fracturing and oil extraction as most are in places ideal for fracturing and extraction. Frank Turina, in his presentation, outlined these impacts and suggested some mitigation technologies. The process of fracturing is very loud from the sound of generators and water pumps creating noise pollution concerns not just for wildlife in national parks but even in far off populated urban areas. Frank Turina explained how the use of “sound blankets” and insulated coverings mitigate some of the noise pollution but at best only around 50%. Frank Turina also outlined the impacts of light pollution from fracturing sites. Because these sites generally operate 24/7, and the equipment is very dangerous, the facilities must be extremely well lit. Light pollution reduction, Frank Turina argued, compared to noise reduction, is fairly cheap and easy

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to implement, outlining the practice of decreasing the angle of light fixture and installing inexpensive hoods. Frank Turina stressed the need for strong regulations of fracturing facilities.

Andrea Stacy, in her presentation outlined the negative impacts fracturing and oil consumption has on air quality. Bad air quality can create haze in the atmosphere and decrease visibility. This is particularly important to national parks as it makes it difficult to truly enjoy wide scenic vistas, one of the main reasons people go to these parks. Andrea Stacey also outlined the negative impacts of natural gas extraction and movement, sourcing that the leakage rate for any segment of oil pipeline is 31% meaning that any benefits over coal are null. Andrea Stacy also outlined the dangers of nitrogen deposition on soil nitrogen content, creating mass die offs of vegetation. This is most observed in the Bakken regions of North Dakota.

Reflection

As a student I found this panel to be very applicable to my studies of environmental science. I was not aware of the details of Hydraulic fracturing and its true impacts on the urban and natural environment. Seeing the data and images from satellites and cameras really drove home for me the true impacts of these processes. Frank Turina showed us a satellite image of light pollution before and after a fracturing apparatus was set up. You could literally see it from space! I also was surprised to learn that the leakage rate of oil pipelines was over 31% making it just as negatively impactful as coal burning.

My main take away from this panel was the need for greater regulation of these facilities to ensure their impacts are mitigated as much as possible. My main critique of the panel was its focus solely on mitigation. I would have been really interested to learn about the policies and laws that allow these facilities to operate with little regulation and in such proximity to protected lands when their negative impacts are well known. As well as what is currently being done to tackle these issues and how to get involved.