

Poster Abstract

## **Epigenetic Modifications of Global Methylation Following Heavy Metal Dust Exposure**

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The Nellis Dunes Recreational Area (NDRA) is a popular off-road vehicle (ORV) site in Clark County, Nevada. Recreationists of the NDRA are exposed to metals, minerals, and small particulate matter (PM) from both natural wind erosion and dust emissions related to ORV activity. Exposure to geogenic PM comprised of minerals and heavy metals has been linked to a variety of human health effects including alterations to the epigenome. In this study, adult female B6C3F1 mice were exposed to dust (median diameter: 4.4  $\mu\text{m}$ ) collected from active and vegetated sand dunes in NDRA suspended in phosphate-buffered saline and delivered at concentrations ranging from 0.01 to 100 mg dust/kg body weight by oropharyngeal aspiration, once per week for one month. DNA was extracted from the liver tissue, and evaluated for global methylation using a 5-mC DNA ELISA. Methylation between the high dose group and control group for CBN6 and CBN7 were compared. Significant changes ( $P < 0.05$ ) between the control and high dose groups indicated that exposure to dust from these site-specific areas of NDRA contributed to changes in DNA methylation of the liver. Exploration of toxicoepigenomics would lead to further understanding of mechanism of toxicity between environmental exposures and disease pathogenesis.