

**The National Toxicology Program Research on Synthetic Turf/Recycled Tire Crumb Rubber: 14-Day Exposure Characterization Studies of Crumb Rubber in Female Mice Housed on Mixed-Bedding or Dosed Via Feed or Oral Gavage**

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Public health concern for playing on synthetic turf fields with crumb rubber infill has increased in recent years. Crumb rubber (CR) manufactured from recycled tires contains potential carcinogenic and toxic substances and there is potential for widespread exposure with over 12,000 synthetic turf fields in the United States. The National Toxicology Program (NTP) is conducting research to improve the understanding of potential human exposure and health impacts following CR exposure. CR was obtained from multiple commercial sources, combined into a single lot and size fractionated for use in these studies: 37-170 $\mu$ m for oral gavage, and greater than 170 $\mu$ m for feed and bedding studies. NTP conducted 14-day studies in female B6C3F1/N mice (n=10/group/route) by oral gavage (0 or 1250 mg/kg/day in corn oil), dosed-feed (0 or 50,000 ppm) or by housing on CR mixed-bedding (bedding only or 50%/50% by weight). Plasma and urine were collected to determine internal exposure. Hematology, bone marrow cytology and limited histopathology were evaluated as conventional approaches to assess systemic exposure through evidence of biological effect. There were no effects on survival, food consumption, body weight or organ weights following CR exposure by any route tested. Small changes in hematology parameters were observed in CR treated groups, however none of these changes were considered biologically meaningful. There were no microscopic lesions observed in animals exposed to CR via dosed-feed or mixed-bedding. Animals dosed with CR by oral gavage had higher occurrences of esophageal inflammation compared to the respective controls; the average severity of this lesion was similar between controls and the CR gavage group. In conjunction with chemical characterization and in vitro testing of the material used here, this work will contribute to what is known about potential human exposure to CR constituents resulting from contact with CR used in synthetic turf.