

separate the infill (whether on-site or off-site); testing and analysis of the recovered infill properties; owner and/or installer policies regarding material reuse or recycling; warranties; a lack of established on-site technologies or processing facilities able to clean the material; the costs associated with all of these steps; and a lack of precedents for using the material to make new products. CalRecycle intends to explore EOL management for turf crumb rubber infill and other TDPs over the next few years.

Indications are that 2016 may be equally strong or even stronger for the use of crumb rubber infill. Although negative media reports are concerning, major new research projects sponsored by CalRecycle (through a contract with OEHHA) and the U.S. EPA are underway that could help further inform these concerns.

### **Ground Rubber/Nuggets**

This segment mainly includes three very different markets with unique dynamics: loose-fill playground surfacing, landscape mulch, and equestrian surfacing. These market segments are grouped together because they all use ground rubber (i.e., tire-derived material of ¼ inch to ¾ inch in size) or nuggets (which may range in size to more than 1 inch). Grouping these products simplifies the surveys used to gather information for the purpose of this report. In 2015, this market category consumed approximately 1.2 million PTEs, 6 percent more than in 2014. One major producer of landscape mulch closed down in 2015, but research indicates demand in this segment is currently strong but extremely competitive. Buffings are not counted in the above estimates. Buffings are, however, most often used in landscape mulch applications, albeit with a much different specification than nuggets.

### **Molded and Extruded Products**

In 2015, use of California-produced crumb rubber by molded product manufacturers dropped by 26 percent, to 0.6 million PTEs, compared to 2014. This was on the heels of a 12 percent drop in 2014. This segment is by far the most diverse of all markets for California tire-derived materials. As detailed in CalRecycle's California Tire-Derived Product Catalog (available online at [www.calrecycle.ca.gov/Tires/Products/Catalog/](http://www.calrecycle.ca.gov/Tires/Products/Catalog/)), molded products include a variety of products used in the flooring, roofing, landscaping, building construction, transportation, cleaning supply, and agricultural industries, among others. This category also includes tiles used in playgrounds and other outdoor surfacing applications.

In 2015, about a dozen California firms produced molded or extruded products, including several involved in feedstock conversion (i.e., reformulating established products to use crumb rubber as part of the feedstock mix), and they continue to use relatively low volumes of crumb rubber as they work toward expanding production and sales. Reasons for low volumes in the molded category include historically low prices for oil and virgin raw materials and the challenges associated with commercializing and expanding sales for products newly incorporating crumb rubber raw materials. However, in addition to California-produced crumb rubber, some of these firms also use significant quantities of buffings and imported crumb rubber. Available data indicate that up to 24