Published on *The National Law Review* https://natlawreview.com

OECD Publishes New Test Guidelines for Nanomaterials

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On June 30, 2022, the Organization for Economic Cooperation and Development (OECD) published six new Test Guidelines (TG) and ten updated or corrected TGs. The new TGs include the first two harmonized methods for measuring certain nanomaterial-specific physical-chemical properties. According to OECD, these harmonized methods were developed to respond to regulatory needs in member and adhering countries, specifically for manufactured nanomaterials. The development of these TGs was supported financially by the European Commission (EC):

- Test Guideline 124 on Volume Specific Surface Area of Manufactured Nanomaterials: This TG describes a procedure to determine the Volume Specific Surface Area (VSSA) of powdered solid manufactured nanomaterials. According to the TG, this physical-chemical property may influence the behavior and biological effects of manufactured nanomaterials and thus can be requested for the safety testing of manufactured nanomaterials. The TG states that data on VSSA or (mass) specific surface area (SSA) may provide information on the characteristic structure of the nanomaterial and can: help identify potential hazards or hazard modifications associated with similar structures; help to estimate nanomaterial fate in the environment; and help to identify modification of exposure site-specific hazards related to the physico-chemical properties. Moreover, in some cases, VSSA or SSA data can be used to relate dose to observed fate, behavior, and effects of a specific nanomaterial, as the surface area may be the toxicologically relevant dose metric.

- Test Guideline 125 on Nanomaterial Particle Size and Size Distribution of Nanomaterials: The TG states that to address the specific needs of manufactured nanomaterials, the OECD TG No. 110, “Particle Size Distribution/Fibre Length and Diameter Distributions,” was identified as one of the TGs to require an update. The current TG 110, adopted in 1981, is valid only for particles and fibers with sizes above 250 nanometers (nm). The OECD Working Party on Manufactured Nanomaterials (WPMN) prioritized updating TG 110 to be applicable also to particles at the nanoscale or drafting a new nanomaterial-specific TG. The TG states that the WPMN eventually decided to develop a new TG that covers the size range from 1 nm to 1,000 nm, intended for particle sizes and particle size distribution measurements of nanomaterials. This TG overlaps with TG 110 in the size range from 250 nm to 1,000 nm. When measuring particulate or fibrous materials, the appropriate TG should be selected depending on the size range of particles tested. In line with TG 110, the new TG for

nanomaterials includes separate parts for particles and fibers.

National Law Review, Volumess XII, Number 189