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Current state of knowledge when it comes to consumer exposure to nanomaterial embedded in a solid matrix

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Little is known about consumer exposure to engineered nanomaterials (ENMs) stemming from NM-containing consumer products. Here, we focus especially on studies that have investigated the release of ENMs from consumer products, investigating to what extent the information in the open literature can be used to fulfill the requirements outlined in the European chemical legislation, REACH. In total, we have identified about 75 publications of relevance and the number of publications is increasing every year. The most studied materials include silver and titanium dioxide NPs, CNTs and SiO₂. If reported, we summarized the studies by identifying nanomaterial(s), product name, product type, Product or Article Category according to REACH; experimental setup, total content in product, information on release, techniques used for characterization of nanomaterials both in product matrix and in the released form. For studies that report enough information, we developed potential exposure scenarios and derived exposure estimates according to REACH R.16 using the Tier 1 equations for consumer exposure estimation and Tier 1 tools i.e. ECETOX TRA and Consexpo. In general, we find that the information and data provided by each of the studies rarely contain all the information entries that one would need to complete exposure assessments according to REACH.

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