

QEEN II – Assessing Exposure and Health Effects for Nanomaterial Worker: Epidemiologic and Biomarker Approaches

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Good Practices for Public Health
Framework: The 10 Essential Public Health Services



The findings are those of the author and do not necessarily represent the views of the California Department of Public Health.

	1. Monitor health status	2. Diagnose and investigate health problems and health hazards	3. Inform, educate, empower	4. Mobilize community partnerships and action	5. Develop policies and plans
Good Practice	<p>NIOSH: recommendations for CNT/CNF (x-ray, spirometry)</p> <p>DoE Order 456.1A</p> <p>France: EpiNano</p>	<p>NIOSH RELs</p> <p>Biomarkers of Exposure and effect (non-specific): ROS, inflammation</p> <p>NM specific: CNT/CNF (inflammation/fibrosis); Changes in blood, urine, sputum, Exhaled Breath Condensate, resp. and cardiovasc. function; “omics”/epigenetics</p> <p>UFP: Cardio-pulmon. effects</p> <p>Cross-sectional epistudies: limited</p> <p>DoE Order 456.1A</p>	<p>NIOSH REL</p> <p>GoodNanoGuide</p> <p>DANA 2.0</p> <p>DoE Order 456.1A</p>	<p>NNI/NNCO</p> <p>US-EU: CORs</p> <p>SOT (Nano Specialty group)</p>	<p>USEPA Reporting Tool</p> <p>DoE Order 456.1A</p> <p>Registry of nano-facilities (France)</p> <p>Control Banding for risk assessment and management</p>
Needed	<p>Id worker cohorts</p> <p>Registries for exposed workers</p> <p>Medical protocols for ENM exposure?</p> <p>Baseline levels in human tissue?</p>	<p>Standards for dose measurements</p> <p>Protocols for biomarkers of exposure and effect</p> <p>Definition of disease endpoints</p> <p>Specimen banking</p> <p>Prospective epistudies</p> <p>Laboratory capacity</p> <p>Releases of ENM from nano-enabled compounds</p>	<p>Useful HSDS</p> <p>Educate media and public</p> <p>Risk communication</p>	<p>Stakeholder Coordination (public agencies, industries, academia, NGOs/advocacy)</p> <p>Coordination with State agencies?</p> <p>Emergency preparedness/response</p>	<p>Emergency</p> <p>Preparedness/Response</p> <p>Location of nano-facilities</p> <p>Share data with States</p> <p>Health In All Policies</p>

	6. Enforce laws and regulations	7. Link people to needed personal health services	8. Assure competent public health and health care workforce	9. Evaluate effectiveness, accessibility, and quality of services	10. Research for new insights and innovative solutions
Good Practice	Workplace inspections				Standards for publication of toxicity data (DANA checklist)
Needed	Implementation: DoE Order 456.1A USEPA Reporting Tool Worker RtK	Medical professionals with experience in ENM exposure/toxicity Medical protocols Information in appropriate languages	Awareness of ENM in PH workforce (grad schools, medical professions) Training IH personnel	Selection criteria for RELs, ToxProfiles	Standard methodology for toxicity testing, dose metrics Corona effects Sensitive subpopulations Reproductive/dev. effects Publish negative results

<https://www.cdc.gov/stltpublichealth/publichealthservices/essentialhealthservices.html>