

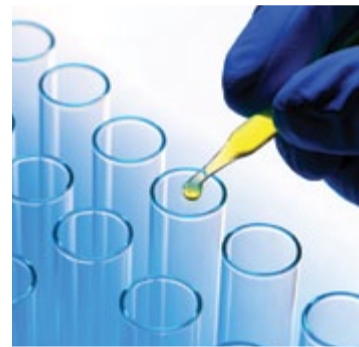


WORKING FOR A HEALTHIER FUTURE



# SAFENANO

Staying safe with  
nanotechnology



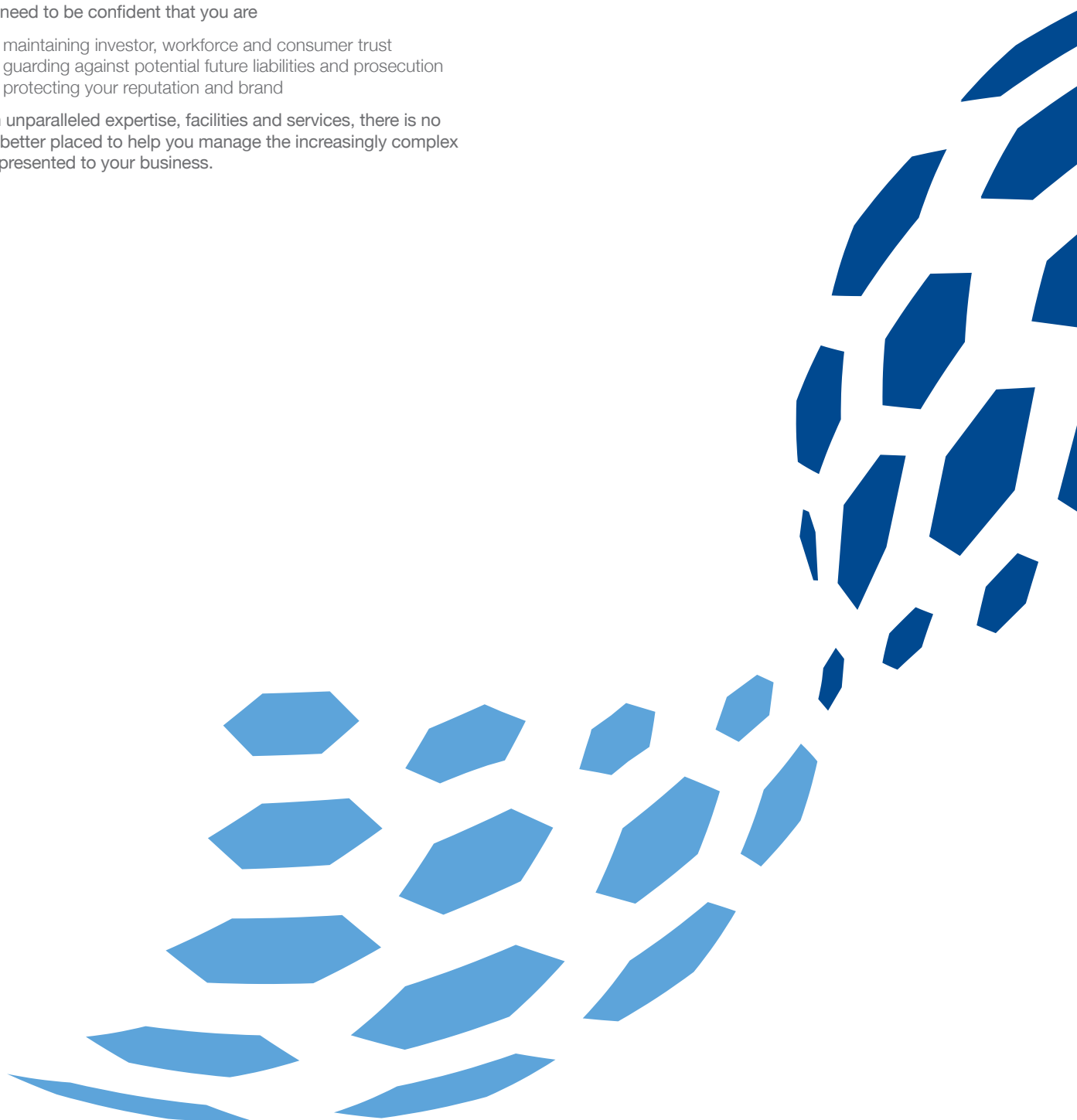
## Why Use SAFENANO?

### To protect your business and give you confidence in managing your risks

Failing to address the uncertainties surrounding the potential risks presented by nanomaterials and nano-enabled products, can jeopardise the success and sustainability of your business. You need to be confident that you are

- maintaining investor, workforce and consumer trust
- guarding against potential future liabilities and prosecution
- protecting your reputation and brand

With unparalleled expertise, facilities and services, there is no one better placed to help you manage the increasingly complex risk presented to your business.



## Our Company

### Working for a Healthier Future

At IOM we deliver one of the broadest ranges of workplace health services in the world. We have over 140 specialist staff strategically located across five UK and Singapore locations. We work for thousands of organisations and our clients are reassured that with IOM they can access some of the most experienced, independent health and safety experts in the world.

IOM helps employers deliver world class workplace practices:

- We understand the factors that affect human health in the workplace and the wider environment.
- We identify and promote practices which can improve the health of workers and the wider population.

We support companies in diverse industries in dealing with risks from established workplace hazards such as noise, chemicals, asbestos, heat, dust or vibration. Emerging risks from new technologies such as those involving nanomaterials are also assessed. Our support also extends to Occupational Health and Expert Witness services.

Good health means good business. As experienced consultants and surveyors we understand what organisations need to do to protect their employees and their businesses. We therefore go beyond workplace compliance and establish true best practice and accurate insight into workplace health issues in your organisation.

**Our clients benefit from some of the foremost experts in their fields. We have an international reputation for excellence in research, services and consulting activities across all industry sectors from high technology to heavy industry. An understanding of workplace health is critical to every business. At IOM we ensure your organisation is at the very forefront of this understanding, as we work together for a healthier future.**

## SAFENANO

### Supporting Your Nanotechnology Risk Management

SAFENANO is IOM's Centre of Excellence in Nanotechnology Safety, providing industry, academia and governments with independent, authoritative expertise and state-of-the-art facilities to address risk and safety issues.

An understanding of workplace health is critical to every business and SAFENANO will ensure your organisation is at the very forefront of this understanding as we work with you to manage the risks. As a SAFENANO client you will have access to some of the foremost experts in the nanotechnology field. IOM has an international reputation for excellence, founded on over forty years of providing consulting and scientific services across all industry sectors from high technology to heavy industry.

SAFENANO brings together multi-disciplinary expertise in hazard, exposure and risk assessment, using current best practice and international standards for particle measurement, toxicology, occupational hygiene and risk management. These services are supported by our open-access Knowledge Base on Safenano.org which communicates the emerging scientific evidence and developments regarding nanotechnology risks and their management.

Our specialised services provide high-value support for the responsible development of nanomaterials and nanotechnology-enabled products, through our integrated approach combining research, client-confidential consultancy and best practice training, including:

- Risk assessment
- Workplace exposure monitoring
- Hazard assessment and toxicity testing
- Research to support innovation
- Horizon-scanning, data interpretation and reviews
- Best practice guidance
- Strategic, regulatory and policy advice

**We help our clients to successfully implement responsible risk management practices, based on a sound understanding of the hazards, exposures and risks with nanotechnology. With global coverage from our UK and Singapore offices, IOM has unrivalled expertise and capability in risk management designed to support research, regulation, and commercialisation of nanotechnology.**



## 1. Risk Assessment

### Duty of Care with Nanotechnology Risks

Every employer and employee has duty-of-care responsibilities to assess and manage the risks presented in the workplace. Working with nanomaterials requires consideration of safety issues under, for example, the Control of Substances Hazardous to Health Regulations (COSHH), or equivalent legislation elsewhere. Undertaking risk assessment is an essential part of complying with your regulatory obligations.

Risk assessment is a pragmatic and systematic process to identify and manage potential health and safety hazards. The evaluation of risk should be made using the best available information, so that appropriate control strategies can be developed and implemented to eliminate or reduce the risk.

SAFENANO is a market-leading provider of risk assessment services using recognised best-practice Standards and a life-cycle thinking approach, providing you with:

- A basis for responsible stewardship of nanotechnologies and regulatory compliance;
- Foresight of emerging issues along the supply chain;
- Support for strategic decision-making, investment, market access, product developments and business risk management.

Our services include:

- Risk assessments through integration of hazard and exposure evaluations, with recommendations on safe practice and appropriate control measures;
- Reviews to scope, assess and interpret evidence and emerging issues;
- Evidence appraisal to inform policy, guidance and standards development;
- Development of workplace exposure limits and safety datasheets;
- Bespoke training to understand and manage risks;
- Compliance checks with advice and support to comply with regulation.



## 2. Workplace Exposure Monitoring

### Assessing the Unseen Risk

With increasing concern and uncertainty regarding worker exposure to nanomaterials, an understanding of potential releases and their control is necessary to make informed risk assessments.

Using state-of-the-art portable instrumentation and current ISO, BSI and other international standards, our approach is tailored to the detection and characterisation of airborne particulates that can pose an exposure risk.

We can identify and help you control exposure in the workplace through:

- Real-time characterisation of particle release from the handling, manufacture and finishing of nanomaterial products and articles;
- Background monitoring to discriminate between natural and process-related emissions;
- Assessing the persistence of nanomaterials in the air;
- Personal and area sampling of airborne particles, with off-line gravimetric, imaging, and/or chemical analysis;
- Evaluation of control measures;
- Providing comprehensive analysis, interpretation, and best practice recommendations.





## 4. Hazard Assessment & Toxicology Testing

### Evaluating the Hazards with Nanomaterials and Products

Our knowledge and expertise of particle and fibre toxicology can provide the hazard information you need to safely develop and market materials and nanotechnology-enabled products, meeting regulatory requirements.

We support SME- and large-scale manufacturing, R&D, and downstream users of nanomaterials, offering tailored toxicity testing for product stewardship and regulatory compliance. Our integrated approach offers:

- Sample preparation and characterisation;
- Customised study designs for particles and fibres;
- Benchmarked in vitro toxicology studies for inhalation, dermal, and ingestion exposure;
- Complementary assays for evaluating cell viability, oxidative stress and inflammation;
- Safer-by-design screening for candidate product evaluation;
- Biodurability assessment;
- Optical, confocal and electron microscopy analysis of cells and tissue;
- Support with regulatory compliance;
- Access to ecotoxicology expertise to support environmental risk assessment.



## 3. Laboratory Services & Analysis

### Using Characterisation to Support Risk Assessment

SAFENANO offers specialist laboratory services to support the risk assessment of nanomaterials, including:

- Particle aerosolisation with in situ characterisation of number, size and surface area, and sampling for off-line microscopy, gravimetric and chemical analysis by ICP-AES;
- Particle fractionation to provide respirable-size-classified samples for toxicity assessments;
- Simulation of common handling processes under controlled conditions;
- Dustiness testing to European Standard EN 15051;
- Biodurability assessment;
- Analysis of air filter samples from routine- / reassurance-monitoring
- Morphological and elemental sample analysis by SEM/EDXS;
- Elemental Carbon determination (NIOSH 5040) for carbon-based nanomaterials;
- Particle density measurement by Helium pycnometry;
- Dynamic light scattering for particle size, zeta-potential and molecular weight analysis;
- Access to other specialist characterisation instrumentation (e.g. TEM, FT-IR, XPS, SIMS, Raman).

## 5. Research to Support Innovation

### De-risking New Technologies

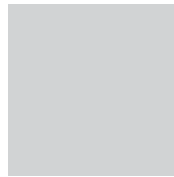
Emerging technologies and cutting edge science provide opportunities but also carry risk. The full benefits of key technological advances can only be realised with full consideration of the potential risks to workers, consumers, and the environment.

We support research by providing expertise to de-risk the development of new processes and products, to help minimise the barriers to commercial implementation in a safe and sustainable way.

**We provide safety work packages for innovation research projects which identify potential hazards and exposures across relevant processes and value chains, to create a comprehensive risk appraisal. Based on this we recommend risk management measures which ensure the safety of the innovation.**







SAFENANO

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