



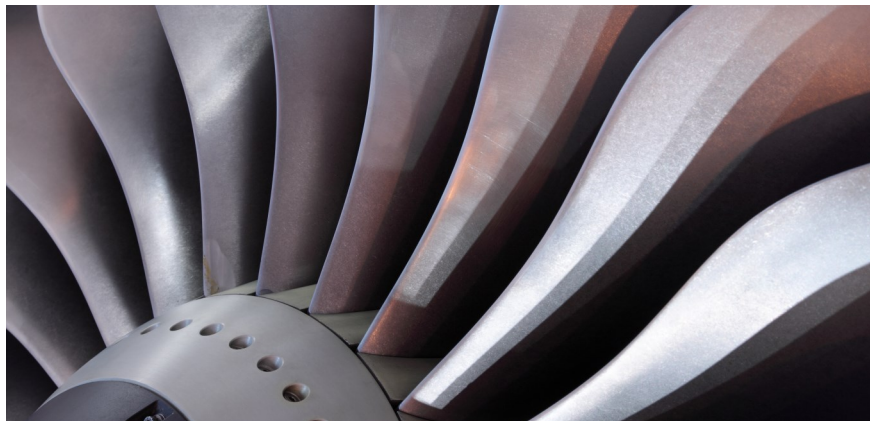
## UNDERSTANDING NICKEL SUBSTANCES

Supporting the Nickel Institute and Nickel Consortia on REACH regarding registration, analysing nickel alternatives and evaluating the suitability of risk reduction measures

Nickel is an important element in many alloys such as stainless steel, and nickel substances are used for various purposes in cars, airplanes, batteries, electronics and industrial catalysts. The Nickel Institute and the Nickel Consortia were facing major challenges in meeting the requirements of the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) registration deadline in 2010. Many nickel substances are seen as possible Substances of Very High Concern (SVHC) and as potential candidate substances for the Authorisation List. A listing here would dramatically change the environment for the use of nickel for industrial purposes as the long term intention would be to phase out its use. DHI supported the Nickel Institute and Nickel Consortia in these areas by assessing exposure and risks and by evaluating alternatives and consequences of a possible substitution.

### SUBSTITUTING NICKEL SUBSTANCES WITH POSSIBLE ALTERNATIVES

Nickel Institute is the global association of the world's primary nickel producers who account for close to 85% of the world's annual nickel production outside of China. The association aims to promote and support the appropriate and responsible use of nickel in a wide range of applications. In Europe, it has been a priority to stay compliant with REACH and to provide documentation to authorities and users. The Nickel Consortia – established in 2008 with the purpose to register nickel and nickel substances – includes the main manufacturers, importers and downstream user sectors. Some nickel substances are



Together with international experts, DHI prepared more than 100 individual exposure scenarios for 11 different nickel substances.

### CLIENT

Nickel Institute, Nickel Consortia

### CHALLENGE

Meeting the requirements of the 2010 REACH registration deadline and responding to the discussion of nickel substances as possible entries on the candidate list

### SOLUTION

- Preparing over 100 exposure scenarios for all identified uses for nickel and nickel compounds. This was a key input to the Chemicals Safety Reports and part of the registration
- Identifying and evaluating alternatives to nickel plating in industries such as cars, aeroplanes and electronics, as well as its use in the catalysts sector
- Analysing possible risk management options for 10 nickel compounds and providing an important input to the discussion on the most appropriate risk management option

### VALUE

- Our client was able to register the nickel substances in time for the REACH deadline
- The nickel registration dossiers that were established – probably the most extensive under REACH – have set the standard and example for other metal consortia
- The extensive documentation we developed support scientifically sound decisions on further risk reduction

### LOCATION / COUNTRY

Belgium/Denmark

carcinogenic, mutagenic or toxic to reproduction (CMR) and could be identified as candidates for the authorisation requirements under REACH. Because of this, the Nickel Institute asked DHI to investigate the consequences of substituting these nickel substances with possible alternatives for a range of different uses. We also analysed the options for further risk reduction by regulatory means, where this may be needed.

### EXPOSURE SCENARIOS FOR THE REGISTRATION OF NICKEL SUBSTANCES (2008 – 2009)

REACH requires the development of exposure scenarios for all registered substances. An exposure scenario describes how a chemical substance can safely be used at the work place or by the consumer. The scenario contains calculations or measurements of the exposure to humans and the environment and recommends how the risk should be controlled by the use of different measures such as ventilation or treatment of wastewater. In cooperation with a team of consultants, DHI prepared more than 100 individual exposure scenarios for 11 different nickel substances that were registered during the first round of REACH registrations. The exposure scenarios covered manufacture and down-stream uses including uses in nickel plating, industrial catalysts, battery production, pigments, glass and chemicals production.

### ANALYSIS OF ALTERNATIVES TO NICKEL SUBSTANCES (2010 – 2013)

The Nickel Institute works pro-actively to ensure that decisions by the European Union (EU) Member States on appropriate management tools for nickel and nickel substances are based on adequate information. DHI was asked to provide Analysis of Alternatives for a number of nickel substances used in different industry sectors.

Together with independent experts, DHI identified possible alternatives, analysed their technical suitability and summarised the socioeconomic consequences of substitution. The analyses covered nickel used in functional plating for the automotive and aerospace industry and for decorative plating. Similar analyses were carried out for nickel plating in electronics and nickel-based catalysts. The conclusions were that although alternatives may exist in some applications, nickel-based solutions are often needed to meet the required standards such as sulphur removal in fuel and corrosion protection in aggressive environments. The analyses were developed at a high level of expertise and could be used directly as information material in a number of different areas.

### CLIENT TESTIMONIAL

“ The Nickel Institute as well as the Nickel Consortia have been very impressed with DHI’s expertise and professionalism. Reports and input have always been delivered on time, showing high quality and a good and objective reflection of different options. This supported the Nickel industry to register the substances on time under REACH.

*Dr. Veronique Steukers—Director, H&E Public Policy—Nickel Institute*

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*Nickel is essential in many industrial products and also vital in consumer products such as batteries, cars and bathroom fittings.*

### RISK MANAGEMENT OPTIONS ANALYSIS OF NICKEL SUBSTANCES (2012 – 2014)

As part of the documentation to authorities and other stakeholders, the Nickel Institute wanted to analyse how concerns raised about the use of hazardous nickel substances could be managed by new regulatory initiatives. This process is termed as Risk Management Option Analysis (RMOA).

DHI conducted RMOA for a total of 10 nickel substances applied within different industrial sectors. We assessed possible regulatory initiatives and their efficiency in terms of risk reduction while considering the economic and administrative burden. The overall conclusion was that the most appropriate solution was to adopt a European limit value – the occupational exposure limit (OEL) – for the work environment. A key point in the discussion was that nickel substances are never used by consumers and the concern is related only to use in industrial settings.

### MEETING REACH REQUIREMENTS IN GOOD TIME

The services provided by DHI assisted the Nickel Institute and the Nickel Consortia in achieving REACH requirements. A registration of all nickel substances and their uses in various industrial sectors were submitted in good time before the deadline. Moreover, our work has contributed to the pro-active policy of the Nickel Institute in providing high quality technical and science-based documentation to authorities and stakeholders with the aim to support an informed and sound decision making process.