

Questionnaire for NORM service providers

This questionnaire is intended for institutes and companies providing services relevant for **NORM industries in Belgium**. Its objective is to give to Belgian NORM industries a view on relevant companies and institutes through the publication of a list of "NORM services providers" on the website of the *Federal Agency for Nuclear Control* (FANC), the Belgian radiation protection and nuclear safety authority.

1) Please provide details about your company:

Company name:	Nuclear Control & Consulting GmbH
Name of contact person:	Dr. Rainer Gellermann
Address:	Hinter dem Turme 24; 38114 Braunschweig, Germany
Phone:	+49 162 40 63 726
e-mail:	Rainer.gellermann@nuclear-cc.de
Website:	www.Nuclear-cc.de

2) Which kind of services does your company provide?

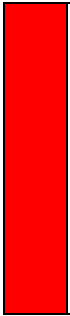
Please tick where appropriate.

Measurements				
Laboratory measurements				<input checked="" type="checkbox"/>
	All matrices			<input checked="" type="checkbox"/>
	Soil	<input checked="" type="checkbox"/>	Solid waste	<input checked="" type="checkbox"/>
	Water (drinking water or groundwater)	<input checked="" type="checkbox"/>	Waste water	<input checked="" type="checkbox"/>
	Reading of radon detector			<input checked="" type="checkbox"/>
	Reading of dose-badge			<input checked="" type="checkbox"/>
	Dust measurements			<input checked="" type="checkbox"/>
	<p>Laboratory measurements are done with partner companies. NCC performs sampling (incl. development of sampling strategies), sample management and checking the quality of results. We are able to deliver measuring results for:</p> <ul style="list-style-type: none"> U-238, U-235, Th-230*, Ra-226, Pb-210, (Th-232 via Ra-228 in solids), Ra-228, Th-228, Ra-224, Ac-227, Ra-223, Cs-137, K-40 from gamma-spectrometry <p>* only at high activity levels</p> <ul style="list-style-type: none"> U-234/U-238; Th-232/Th-230/Th-228, Po-210 from alpha-spectrometry H-3 (LSC, with pre-enrichment possible) C-14 (LCS) Rn-222 in water (emanometry) <p>Additionally to radionuclides we are able deliver analytics of chemical substances (trace elements as Pb, As, organic compounds PAC, HC, ...).</p>			

On-field measurements		☒
	<p>We are able to measure</p> <ul style="list-style-type: none"> • dose-rates (with devices having NaJ-detectors and are suitable to measure very low dose rates; devices are calibrated regularly on reference sites of German BfS) • radon (Alpha Guard) • surface contamination (CoMo 170) <p>We can identify radionuclides on-site with hand-held gamma-spectrometers (IdentFinder)</p> <p>We have done several surveys for checking the radioactivity of oil/gas production facilities as well as chemical processing facilities. With data obtained we built up NORM contamination cadastres.</p> <p>Furthermore, we have experience in sampling soil, water, waste, but also crops, fruits, vegetables, milk, etc. (We are performing such sampling for the German Final Repository "Schacht Konrad" near Braunschweig)</p>	

Impact studies		
Risk-assessment / dose-assessment		☒
	<p>We have done several radio-ecological studies with estimation of doses for persons of the public, e.g.</p> <ul style="list-style-type: none"> • Radiological assessments of mine water discharges in the Fossa Eugenia (Lower Rhine Area near Kamp-Lintfort in NRW).(*) Customer: LINEG, Contact Person: L. Steinberg. Brochure with an extended description of the project (85 pages in German) is available and can be submitted. • Opencast brown-coal mine Hambach (North-Rhine Westphalia). Customer: RWE Power. Contact person: S. Asmus • Radioactive contaminations in a residential area in Hanover-List (Lower Saxony). Customer: Region Hannover. Contact person: B. Evers • Dose assessments for workers in a steel-work. Exposure from Pb-210, Po-210 (Customer: confidential) <p>(*) Study was done on 2004/2005. Our team was involved as project leader. Work was done in our work for the former HGN Hydrogeologie GmbH (HGN was taken over by Fugro in 2008)</p> <p>We have done several studies concerning radioactive contaminations of water:</p> <ul style="list-style-type: none"> • Groundwater contamination in the region of the former U-Mine Königstein (Saxony) (+) • Contamination of River Elbe from discharges of U-Mine Königstein (+) • Groundwater contamination at a radioactive contaminated site with a former chemical plant (North Germany) • Groundwater monitoring "Ellweiler" (former U-Mill in Rhineland-Palatine) – annual evaluation of radionuclide concentrations in groundwater • Analyses of tritium in sewage water of a landfill. • In 2013 we finished a research project (customer BfS) that analysed I-131 in big German rivers (Elbe, Weser, Ems, Rhine) and derived annual balances of I-131 for OSPAR reporting. <p>(*) Studies were done in our work for the former HGN Hydrogeologie GmbH (HGN was taken over by Fugro in 2008)</p>	

NORM waste	
NORM waste management	☒
<p>NCC is active in the NORM waste management.</p> <ul style="list-style-type: none"> • We classify NORM waste according to radioactive as well as chemical-toxic characteristics. • We optimize disposal ways for NORM. • We prepare applications for release of NORM from regulatory control • We prepare case specific or annual balances of disposed NORM (acc. to § 100 German RPO) • We have prepared a study which has analysed possibilities for NORM waste treatment and disposal in a world-wide frame. • We co-operate with German companies that offer services for NORM waste treatment (e.g. Hg-decontamination, decontamination of NORM-contaminated tubings from oil/gas production). • We are able to manage disposal of waste in German underground repositories up to activity of 5 Bq/g (U-238max+Th-232max). <p>Our customers are from oil-gas industry, metallurgy, chemical industry, and mining.</p>	
Decontamination of NORM contaminated equipment	☒
<p>NCC co-operates with German companies that offer services for NORM waste treatment (e.g. Hg-decontamination, decontamination of NORM-contaminated tubings from oil/gas production)</p> <p>NCC has contributed to a process development for extraction of Thorium from Th-Mg-Alloys. The process line is in preparation and we are able to manage problems with Th-Mg-Alloys in near future.</p>	
Site remediation	
Soil remediation	☒
<p>Our team has planned and managed several site remediation measures at radioactive contaminated sites. Most recent projects are:</p> <ul style="list-style-type: none"> • 2012/13: Steering and supervision of remediation measures at a NORM contaminated area in the City of Hanover. Radioactively and chemically contaminated ground in several properties of a residential area had to be decontaminated. The radioactive contaminated soil had to be separated, classified according disposal routes and balanced for masses and activities. • 2014: Planning, steering and supervision of a soil exchange at a radioactive contaminated ground in Oranienburg (near Berlin, Former Th-production site). 	
Water remediation	☒



NCC co-operates for planning of technical solutions for water remediation with other consultant and planning companies.

Our part in any water remediation project covers:

- Analysis of site specific conditions and derivation of proposals for remediation targets.
- Analysis of radionuclide redistributions in the process-line. Prognosis of enrichments that may be of concern for radiological assessments.
- Management of water treatment residues.