

# Research & Development Profile

September 2016

ID	Competency Statement	Type
<b>CATEGORY A: Environmental and Social Impact Assessment</b>		
<b>SUB-CATEGORY 1: Conducting Environmental and Social Impact Assessments</b>		
1	Ensures that the impact assessment scope, criteria and conditions (geographic, environmental, economic, social, and cultural) are defined adequately.	2
3	Determines if sufficient baseline data is available for the impact assessment study.	2
6	Identifies which areas are likely to be significantly impacted by development activities, e.g. biophysical, economic, social, cultural, and heritage resources.	2
7	Assesses environmental and/or social issues, risks or problems, including their cumulative effect and corresponding economic, social and cultural impacts.	2
<b>CATEGORY B: Site Assessment (RRR)</b>		
<b>SUB-CATEGORY 2: Conducting Environmental Site Assessments (ESA - Phase 1 and Phase 2)</b>		
14	Conducts investigation, sampling, screening, and analysis (including geophysical mapping) activities of landforms, soil, ground water, sediments, airborne contaminants, etc., as required.	2
<b>CATEGORY C: Regulatory &amp; Enforcement</b>		
<b>SUB-CATEGORY 5: Interpreting/Enforcing/Complying with Environmental Regulations and Environmental or Sustainability Standards</b>		
36	Defines environmental and/or sustainability performance requirements for specific jurisdictions.	3
<b>CATEGORY D: Pollution Prevention, Abatement, &amp; Control</b>		
<b>SUB-CATEGORY 6: Implementing Pollution Prevention, Abatement &amp; Control (PAC) Methods</b>		
46	Assesses operations and processes for potential pollution problems (involves identifying contaminant sources, determining their characteristics and the magnitude of the potential risks).	2
<b>CATEGORY H: Environmental Sampling &amp; Analytical Work</b>		
<b>SUB-CATEGORY 11: Developing Environmental Sampling, Testing and Monitoring Programs</b>		
86	Determines the need and scope for sampling program, including environmental indicators, chemicals of concern, and sampling constraints	1
87	Develops environmental sampling protocols, including data quality objectives, the frequency and timing of sampling, optimum locations for continuous or discrete sampling, data capture systems, sampling procedures, sampling methodology, personnel, and parameter list for analysis.	1

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88	Develops site-specific work plans, including Quality Assurance/Quality Control (QA/QC) methods, measuring/monitoring procedures and analytical equipment (both field and lab equipment) to be used for the specific application (e.g. air, water, soil, sediments, rock, fauna, flora, human, workplace, etc.).	2
89	Develops methodologies and protocols for the collection and analysis of qualitative data to complement any quantitative data collected.	2
90	Modifies existing sampling programs to reflect changing research priorities and/or environmental circumstances.	1
91	Maintains analytical test instruments and monitoring or sampling equipment as per manufacturers' user-maintenance specifications and user's standard operating procedures, including calibration of instruments/equipment.	3
<b>SUB-CATEGORY 12: Collecting Samples and Data for Environmental Purposes</b>		
92	Determines the appropriate sample size, sampling containers, protocols, preservation methods, collection apparatus and transportation, etc.	2
93	Selects, assembles and deploys analytical test instruments or sampling equipment (such as data capture systems, continuous monitoring devices, drilling cores, water bailers, etc.), including assembly and documentation of deployment and operational conditions and other pertinent details, such as any deviation to standard procedures.	2
94	Collects samples and specimens as per established protocol, using more routine sampling procedures and apparatus.	1
95	Collects samples and specimens as per established protocol, using more complex sampling procedures and apparatus.	3
96	Uses appropriate techniques to prepare (code, preserve, pretreat and transport) samples for analysis while maintaining chain of custody requirements and sample integrity.	1
97	Prepares samples (other than biological) for lab analysis using techniques such as grinding, dehydration, dilution or concentration, chemical extraction, digestion, and fractionation.	3
99	Performs direct measurement of physical parameters for air/water/soil, including for example, temperature, flow rates, pressure, gaseous/particulate emissions, etc.	2
102	Maintains appropriate records and ongoing documentation pertaining to field and laboratory analytical work, including regulatory documentation.	1

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<b>SUB-CATEGORY 13: Analyzing and Interpreting Environmental Samples and Data</b>		
103	Uses more routine analytical procedures and instruments (such as meters, electrodes, and spectrophotometers) to identify and/or quantify the physicochemical properties, specific chemicals or chemical groups, etc. of the samples collected.	1
104	Uses more complex analytical procedures and advanced instruments, such as gas liquid chromatography, mass spectrometry, polymerase chain reaction and Enzyme-Linked ImmunoSorbent Assay, to identify and/or quantify chemical properties, specific chemicals or chemical groups (including those present at trace concentrations), etc. in the samples collected.	2
108	Makes required calculations and estimates including for example, calculation of air quality indices (e.g. daily smog ratings).	2
109	Conducts statistical analysis of data using appropriate computer software, databases, etc.	1
110	Assesses the accuracy and precision of analytical results by applying good practice guidance or established QA/QC methods.	1
111	Interprets analytical data to identify trends, significant changes from historical patterns, deviations, or evidence of environmental stresses, etc.	1
112	Determines how results will be applied, for example redesigning sampling protocol, redesigning research methodology, developing a baseline dataset, etc.	1
113	Conducts quality control reviews of data collection, processing, and analysis to ensure data is 'fit for purpose' using accepted scientific practices and proper Quality Assurance/Quality Control (QA/QC) protocols.	2
114	Prepares summary reports of analysis results to be added into technical reports or presentations to expert and/or non-expert audiences	1
<b>CATEGORY K: Corporate Environmental and/or Sustainability Program Planning &amp; Implementation</b>		
<b>SUB-CATEGORY 19: Conducting Environmental Risk Assessments</b>		
150	Identifies hazards, opportunities or potential risks to human health, the environment, facility operation/financial loss, legal liability, social impact, public perception through such activities as collecting source data, reviewing literature, investigating illness/injuries, and obtaining feedback from workers or the public.	2

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<b>CATEGORY N: Environmental Education &amp; Training</b>		
<b>SUB-CATEGORY 29: Evaluating/Mentoring/Supervising Students/Practitioners</b>		
249	Mentors students and environmental practitioners by advising, supervising, and challenging them to facilitate the development and application of new knowledge in their role as environmental practitioners and community partners in their role in the delivery of sustainable environmental practices.	2
<b>CATEGORY O: Environmental Research</b>		
<b>SUB-CATEGORY 30: Designing/Developing Environmental Research and Development Proposals, Programs, and Projects</b>		
252	Participates in taskforces and committees (set up by industry, governments or professional associations) to expand the body of knowledge on environmental research priorities, methodologies, and breakthroughs.	2
253	Identifies research priorities and opportunities for funding, considering financial viability and other indicators such as, current environmental conditions, scientific knowledge gaps, need for industrial improvements, socio-economic and cultural factors.	2
254	Defines the environmentally-related problem or opportunity and potential scientific, ecological or socio-economic benefits of conducting research (often including its practical application).	2
255	Conducts review of literature and existing data pertinent to the potential environmental research program/project.	1
256	Defines the scope, strategy and objectives for specific environmental research projects and programs, including appropriate quantitative and qualitative methodologies and tools.	1
257	Writes a proposal, communicating the scientific rationale behind the environmental research project to obtain funding and/or approval from internal, industry, government, or other sources.	1
258	Evaluates the technical, environmental and socio-economic merits of proposals (e.g. for determining eligibility and allocation of funds).	1
259	Develops a research action plan for the environmental project (e.g. establish budget, deliverables, timelines and human resource needs) for consideration by stakeholders and decision-makers.	2
260	Identifies the laboratory, equipment and other site-specific needs for the environmental research program.	1
261	Provides expert input for the recruitment of environmental research staff.	1
<b>SUB-CATEGORY 31: Conducting Environmental Research/Publishing Results</b>		
262	Establishes the framework, baselines and benchmarks against which environmental research outcomes can be measured.	2
263	Defines the specific methodologies and protocols appropriate to the environmental research project.	1

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264	Conducts science and social science environmental research (e.g. eco-toxicology studies, developing models, identifying optimal agri-chemical application rates, studies on environmental perspectives and the effectiveness of public education programs, etc.).	1
265	Provides expert guidance to others who may be assisting with the environmental research within or outside the organization.	1
266	Analyzes the environmental research findings to determine if research objectives have been met, or if research methodologies need to be modified.	1
267	Develops recommendations for the application of the environmental research findings based on pilot testing and demonstration.	1
268	Writes up the results of the environmental research in accordance with rigorous publishing guidelines (for publication in peer-reviewed journals, presentation at conferences, etc.).	1
269	Reviews other environmental researcher's reports, proposals, and publication papers to ensure their technical accuracy and soundness.	2