



*Canadian
Registered
Safety
Professional
Examination (CRSPEX)*

**CRSPEX
CANDIDATE HANDBOOK**

The CRSPEX is administered by the
Board of Canadian Registered Safety Professionals (BCRSP)

In conjunction with the examination validation services of
Assessment Strategies Inc (ASI)

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CRSPEX CANDIDATE HANDBOOK

This *Handbook* contains current information about the certification examination (CRSPEX) developed by the *Certification and Examination Committee* of the Board of Canadian Registered Safety Professionals (BCRSP).

IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE CONTENTS OF THIS *CRSPEX CANDIDATE HANDBOOK* BEFORE WRITING THE CERTIFICATION EXAMINATION (CRSPEX).

All previous versions of this *Handbook* are null and void

Please direct all correspondence, address changes, requests for information about the CRSP certification program to:

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All eligible candidates will receive notification of the next scheduled CRSPEX approximately eight weeks prior to the writing dates in May and October.

It is the candidate's responsibility to advise the BCRSP of their writing intentions by the due date identified on the CRSPEX notice. Approximately a week to ten days in advance of the CRSPEX, a representative from your assigned Regional Screening Centre will contact you to provide information on the writing location.

Vision Statement

The Board of Canadian Registered Safety Professionals (BCRSP) is the certifying body for occupational health, safety and environment professionals.

Mission Statement

To promote occupational health and safety, environmental protection and public safety through the certification of qualified occupational health, safety and environment professionals.

Values

The Board of Canadian Registered Safety Professionals (BCRSP) is committed to preservation of life and health, protection of the environment, confidentiality, professionalism and fairness.

The *Board of Canadian Registered Safety Professionals (BCRSP)* was established in 1976 to advance the profession of occupational health, safety and environment through the development of a certification program. The BCRSP's *Governing Board* establishes policies, procedures and standards for certification and recertification (certification maintenance) in the field of occupational health, safety and environment. The granting of the **Canadian Registered Safety Professional (CRSP)**® designation by the BCRSP recognizes professional achievement through an individual's participation in this voluntary certification program.

Accreditation

The BCRSP is accredited to ISO 17024 (Personnel Certification Body) and to ISO 9001 (Quality Management System).

Membership/Affiliation

The BCRSP is a member of the National Organization for Competency Assurance (www.noca.org), the Canadian Network of National Associations of Regulators (www.cnnar.ca). and has a *Memorandum of Understanding (MOU)* with the Board of Certified Safety Professionals (www.bcsp.org).

Statement of Nondiscrimination

The CRSPEX is offered to all eligible candidates regardless of age, gender, race, religion, national origin, marital status or disability.

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CRSP Program Overview

Introduction to the CRSP Program

The purpose of certification in the occupational health, safety and environment (ohs&e) field is to promote excellence and professionalism. The program certifies individuals who have met the formal education and experience requirements and who demonstrate that they have acquired minimum, entry-level knowledge and expertise in this field by passing the Board's examination (CRSPEX).

The CRSP designation provides employers and the public with the assurance that certified individuals possess the necessary skills, knowledge and experience to perform competently.

The high standards of the certification program are ensured by the close working relationships among the BCRSP, ohs&e professionals and examination consultants.

The certification program is not designed to determine who is qualified or who shall engage in ohs&e activities. The goal is to promote excellence and professionalism by documenting individual performance as measured against a predetermined level of knowledge about ohs&e. A cooperative effort by the BCRSP, *Assessment Strategies Inc (ASI)* and practicing ohs&e professionals has resulted in defining the body of knowledge significant to the practice

of ohs&e. It is these competencies that are included in the CRSPEX.

Management Services

The BCRSP contracts with an independent association management company (AMC), *Fletcher Wright Associates Inc. (FWA)*, to provide administrative support for the certification process and Board operations. The firm maintains Board records, handles finances, processes applications, CRSPEX applications, *Certification Maintenance Program (CMP)* and requests for CMP approvals. Contracting with an AMC provides a stable base from which the voluntary Board operates and serves as a conduit of information between individual CRSPs, candidates, the contracted examination consultants and the Board.

Testing Services

Assessment Strategies Inc (ASI) is an independent testing company that performs professional assessment services. ASI is currently providing examination services to professional associations and credentialing agencies and independent certification boards. ASI carefully adheres to industry standards for development of practice-related, criterion-referenced examinations to assess competency. The firm offers a full range of services including: practice analyses and development of test specifications, psychometric guidance to committees of content experts during examination question

writing, development of content-valid examination instruments, test administration, scoring and reporting test result. Visit www.asi.ca for more information.

Objectives of Certification

The objectives of the certification program for ohs&e professionals are to:

1. Promote professional standards and improve the practice of ohs&e;
2. Give special recognition to those professionals who demonstrate an acquired body of knowledge and expertise in the field through successful completion of the application, interview and examination (CRSPEX) process;
3. Identify for employers, the public and members of allied professions, individuals with acceptable knowledge of the principles and practice of ohs&e; and
4. Foster continuing competence and maintain the professional standard in ohs&e through the certification maintenance program (CMP).

Definition of the Canadian Registered Safety Professional (CRSP)[®]

The practice of ohs&e occurs in all sectors of business, industry and government, is performed by professionals with diverse educational and experience backgrounds and involves the knowledge, skills and abilities needed to perform the tasks

significant to practice in the CRSPEX content outline (see the Board's *Blueprint for the Canadian Registered Safety Professional Examination*).

A Canadian Registered Safety Professional (CRSP) is a person who through the integration of specialized knowledge, abilities, skills, attitude and judgement, applies the expertise of safety science and technology, safety and environment, occupational hygiene, fire prevention and protection, ergonomics, auditing, risk management, health promotion and other professional safety domains. These domains serve to create or develop, along with other managers and leaders of business, government and academia, those policies designed to reduce the hazards that may harm people and the environment. The policies include the development of procedures, processes, standards, specifications and systems intended to achieve optimal control and maximum reduction of the hazards and/or damage to property, equipment and materials.

The *Certification and Examination Committee's* goal is to produce examinations that test generic concepts that may be applied to any setting. Candidates who pass the CRSPEX must understand how each of the eleven domains (subject matter) – *Accident Theory, Environmental Practices, Ergonomics, Fire Prevention and*

Protection, Health Promotion, HSE Auditing, Law and Ethics, Occupational Health Safety and Environment Systems, Occupational Hygiene, Risk Management, Safety Techniques and Technology integrate together to produce an effective and efficient ohs&e system.

Certification

To become certified, each candidate must, after having been recommended by the *Regional Screening Centre*, pass the CRSPEX. The CRSPEX is administered in May and October through *Regional Screening Centres* across Canada. Once approved by the Governing Board, certified professionals are entitled to use the designation "CRSP". The designation is valid from the date of approval by the *Governing Board* through to the end of the current calendar year. The designation is renewed annually by completing the *Declaration of Continuing Practice* and by paying the annual renewal fee.

Each successful candidate receives a certificate that is suitable for framing, identification card, CRSP pin and *BCRSP Reference Manual*.

Recertification

Following successful completion of the CRSPEX, each CRSP is required to maintain certification by fulfilling the requirements of the *Certification Maintenance Program (CMP)*. Current full-time employment in the ohs&e field is required to maintain active CRSP status. The

full details of the *Certification Maintenance Program* are described in the *BCRSP Reference Manual* and are posted on the web site (www.bcrsp.ca).

The *CMP* is based on the calendar year with each cycle beginning on the first day of January following the date the CRSPEX was passed. The first *CMP* cycle may be from one to five years – determined by the last digit of the assigned certification number. All subsequent cycles are five years. A minimum of 25 certification maintenance points must be earned over each five-year cycle (points are prorated for cycles less than five years).

For example, if you pass the May 2008 CRSPEX, your first *CMP* cycle officially begins January 1, 2009. However, *CMPs* earned in the period between the passing of the CRSPEX and the official start of the *CMP* cycle may be applied to the first year's accumulation of points.

Eligibility Requirements

In order to proceed to the writing of the CRSPEX, candidates must have successfully passed through the *Qualifications Review Committee's* application assessment and the *Regional Screening Centre's* interview.

Upon the recommendation of the *Regional Screening Centre*, candidates have two years to write the CRSPEX for the first time. Candidates who are unsuccessful in their first attempt may have up to

three supplementary writings over the following two years.

Candidates may apply for a one-year, one-time writing extension (fee is currently \$100). The writing extension may be applied to the first writing period or the supplementary writing period, **but not both**.

Each candidate must take the time to assess and judge his/her own readiness to write the CRSPEX.

A careful review of the eleven domains (124 competencies) identified in the *Blueprint for the Canadian Registered Safety Professional Examination* is essential before you make the decision to write.

The *Certification and Examination Committee* (CRSPEC) develops the CRSPEX in conjunction with *Assessment Strategies Inc.* to test the knowledge of entry-level ohs&e professionals on the competencies identified in the *Blueprint for the Canadian Registered Safety Professional Examination*. The CRSPEX is designed to test candidate's knowledge of the competencies expected of entry-level registered ohs&e professionals.

About the CRSPEX

The CRSPEX is a *criterion-referenced examination* (A test that measures the degree of command of a specified content/skills domain or list of instructional objectives. Scores are interpreted in comparison to a predetermined performance standard, or as a degree of mastery

of a defined domain independently of the results obtained by other candidates). A fundamental component of the development of the CRSPEX is a comprehensive description of the content domain being measured.

In the case of the CRSPEX, the content domain of interest consists of the *competencies* (The behaviour statements that reflect the combined knowledge, abilities, skills, attitudes and judgment) a registered ohs&e professional is required to possess in order to practice safely and effectively. These competencies form the basis of the CRSPEX.

The CRSPEX will consist of between 190 and 210 *operational* multiple-choice questions, i.e., questions appearing on the examination that have been approved by the CRSPEC. These questions count towards the candidate's score.

With 124 competencies to measure and a sound sampling approach for these competencies, an examination of between 190 and 210 operational questions is sufficient to make both reliable and valid decisions about an examinee's readiness to practice safely and effectively.

The multiple-choice questions of the CRSPEX are presented in one of two formats, *case-based* (a set of questions associated with a brief scenario) or *independent questions* (stand-alone examination questions that contain the information necessary for responding).

See Appendix B for sample CRSPEX questions.

Candidates should thoroughly review the *Blueprint for the Canadian Registered Safety Professional Examination*.

The *Certification and Examination Committee* is responsible for determining the CRSPEX content and the examination specifications, maintaining an item bank of approved examination questions, approving individual examinations for administration and setting the passing score.

The *Certification and Examination Committee* members form a representative group of practitioners. This committee reviews all examination questions before they are used and helps to provide the practice-related perspective that underlies valid examinations.

The BCRSP has contracted with ASI, a professional testing company, to provide psychometric guidance for the CRSPEX. ASI is responsible for the scoring, statistical analysis, test equating and test misconduct analysis.

Application Process to Write the CRSPEX

The BCRSP neither sponsors, endorses nor financially benefits from any examination preparatory course.

You are **not** accepted or approved to take the CRSPEX by registering for a preparatory course offered by any

provider. You **MUST** apply directly to the BCRSP to take the CRSPEX.

1. Each candidate must submit the completed, signed and dated *CRSPEX Notice* to the BCRSP by the deadline date along with any applicable CRSPEX fees (*CRSPEX Notices* are mailed to all eligible candidates approximately eight weeks in advance of each administration).
2. Candidates may choose to either write or to waive the writing of the CRSPEX within the two year period.
3. Approximately a week to ten days in advance of the CRSPEX date, you will be contacted by a representative of your assigned *Regional Screening Centre* and advised of the exact writing location.
4. Candidates may request a change to another Regional Screening Centre by written request only. The request must be received at the BCRSP office along with the completed CRSPEX notice by the date identified on the notice. No changes will be accepted after this date.
5. If the *Regional Screening Centre* representative does not contact you within a week of the writing date, you should contact the Centre's representative at the telephone number noted on the *CRSPEX Notice*.
6. The BCRSP forwards all CRSPEX candidate packages to the *Regional Screening Centres* approximately

two weeks in advance of each administration.

7. The CRSPEX is administered from 9:00 a.m. to 12:30 p.m. (local time) on the first Saturday in May and October (except when the first Saturday conflicts with a statutory holiday) through the Board's *Regional Screening Centres*. No alternate writing locations are permitted.

8. Candidates who arrive at the writing location later than 15 minutes from the scheduled start time will **not** be admitted. Unscheduled candidates (walk-ins) will **not** be admitted.

Required Candidate Identification

To gain admission to the Regional Screening Centre writing location, you must present a current legal identification bearing your photograph. Acceptable forms of legal identification include a driver's license, government identity card or passport. *Credit cards, employment badges, student ID cards or club membership cards are NOT acceptable for legal identification.*

You will also be required to sign a roster for verification of identity.

The invigilator at each Regional Screening Centre will have a roster that lists the name of each approved candidate testing at that site. *You must provide identification that matches the name appearing on the roster to gain admission to the test site and take the CRSPEX.*

You must have proper identification to gain admission to the Regional Screening Centre CRSPEX location.

CRSPEX Time and Format

Three and one-half (3½) hours are allocated for the examination (9:00 a.m.-12:30 p.m.). The time limit is intended to allow candidates to complete the entire examination by working quickly and efficiently.

All of the *case-based* questions will be presented first followed by *independent questions* grouped by subject area (domain).

All questions are presented in the same format – the body of the question (stem) and four answer choices (options) labeled A, B, C, or D.

Mark your choice for each question using a soft lead pencil (eg - 2HB) on the *Answer Sheet* provided.

It is highly recommended that you answer the questions in those subject areas (domains) that you are most familiar with first and leave the ones that you are less familiar with to later in the examination. Be sure to answer each question on the examination. There is no penalty for incorrect answers.

Procedures for the CRSPEX

1. Report to your *Regional Screening Centre* location by at least 8:30 a.m. local time on the day of the CRSPEX.

2. No books, paper, dictionaries, other reference materials, computers or personal items (briefcases, palm pilots, cell phones, etc.) may be taken into the CRSPEX. You may wish to lock all of your personal items, other than your identification and keys in your automobile.

3. You will be provided with scratch paper to use during the examination, which must be returned to the CRSPEX administrator at the completion of the examination. Failure to do so will result in your examination not being marked. *No documents or notes of any kind may be removed from the examination room.* All questions, paper and written materials are the property of the BCRSP and may not be reproduced in any form.

4. No questions concerning the content of the examination may be asked during the CRSPEX.

5. You may take a washroom break whenever you wish but you will not be allowed additional time to make up for time lost during such breaks. Ensure that your answer sheet is face down when you leave the room. Only one candidate at a time may leave the room for a washroom break.

6. The CRSPEX invigilator may dismiss a candidate from the examination for any of the following reasons:

- candidate's admission to the CRSPEX is unauthorized;
- candidate creates a disturbance, is abusive or otherwise uncooperative;
- candidate gives or receives help or is suspected of doing so;
- candidate attempts to record test questions or make notes;
- candidate attempts to take the CRSPEX for someone else; or
- candidate is observed with notes.

7. No electronic devices are permitted in the testing centre, including telephones or signaling devices such as pagers and alarms.

8. Candidates who wish to do so are permitted to bring a personal calculator and use it during the CRSPEX. The only type of calculator permitted is a simple battery-powered pocket calculator that **does not** have the capability to print, store or retrieve data.

Following the CRSPEX

A CRSPEX questionnaire will be e-mailed to you approximately one week after the writing date. You are encouraged to submit your comments. The *Certification and Examination Committee* reviews all comments.

Approximately four to six weeks following the CRSPEX, you will be mailed your results. You will be provided with your overall score and your score for each of the eleven subject areas (domains).

To assure confidentiality, no candidate test scores will be reported over the telephone, by electronic mail or by facsimile.

The BCRSP will not release a copy of individual score results to third parties without your written authorization.

Inclement Weather or Emergency

In the event of inclement weather or unforeseen emergencies on the day of the examination, the Regional Screening Centre invigilator will determine whether circumstances warrant the cancellation of a CRSPEX. The examination will usually not be cancelled if the Regional Screening Centre personnel are able to open the test centre.

Every attempt is made to administer examinations as scheduled. However, should an examination be cancelled at a Regional Screening Centre, all scheduled candidates will be granted one writing extension to their two year writing period.

Special Accommodations for Religious Observance

A candidate whose religious beliefs require observance activities to be performed during scheduled testing hours may request special arrangements. Such requests must be made in writing to the BCRSP at the time the completed CRSPEX examination notice is submitted. Verification of religious affiliation and details of the requested accommodation must be included.

Regional Screening Centre personnel will be prepared to accommodate requested needs as authorized by the Board's Executive Director.

Special Arrangements for Candidates with Disabilities

The BCRSP strives to ensure that no individual with a disability is deprived of the opportunity to take the examination solely by reason of that disability. The BCRSP will provide reasonable accommodations for candidates with disabilities. A candidate with a disability may request special accommodations and arrangements to take the CRSPEX on the regularly scheduled test date at Regional Screening Centres. Such requests must be made in writing to the BCRSP at the time the completed CRSPEX examination notice is submitted. Verification of disability and statement of the specific assistance necessary must be included.

Regional Screening Centre personnel will be prepared to accommodate requested needs.

Security

The BCRSP and ASI maintain test administration and test security standards that are designed to assure that all candidates are provided the same opportunity to demonstrate their abilities.

Any candidate who gives or receives assistance from another candidate during the examination will be required to turn in his/her test

materials immediately and leave the testing centre. In these circumstances, the candidate's examination will not be processed and the situation will be reported to the BCRSP. *The performance of all examinees is monitored and may be analyzed statistically for purposes of detecting examination misconduct.*

The BCRSP reserves the sole right to cancel or withhold any test scores if, in its opinion, there is adequate reason to question their validity.

Any individual who removes or attempts to remove examination material or information from the test site will not have their examinations processed.

Disciplinary Policy

The BCRSP shall undertake sanctions against applicants, candidates or individuals already awarded the CRSP designation only in relation to failure to meet Board requirements for initial certification or recertification. The BCRSP certification program is a voluntary process, not required by law for employment in the field. Monitoring and evaluating actual job performance is beyond the scope of the BCRSP.

Applications may be refused, candidates may be barred from future examinations, or individuals already certified may be sanctioned, including revocation of the CRSP designation, for the following reasons:

1. Attesting to false information on the application or on recertification documents or during the random audit procedure.
2. Giving or receiving information to or from another candidate during the examination.
3. Removing or attempting to remove examination materials or information from the testing centre.
4. Unauthorized possession and/or distribution of any official testing or examination materials.
5. Representing oneself falsely as a designated CRSP.

Passing Score Determination

The standard or pass mark is set in reference to the content and the difficulty of the examination questions. The standard is set by a panel of content experts (all Canadian Registered Safety Professionals) from across Canada that works closely with the Board's examination consultants, *Assessment Strategies Inc.* to ensure that the examination meets the *Examination Blueprint* guidelines.

The pass mark is set at a level that represents the performance expected of a competent safety professional.

The standard setting method used to establish the pass mark for the CRSPEX is *the Angoff* technique. Using this technique, the panel of content experts reviews each examination question and produces

ratings based on a common understanding of a competent safety professional. In addition to these ratings, a variety of relevant data (for example, information on the preparation of candidates, data on results from previously administered examinations) are carefully considered to ensure the standard that candidates must achieve on the examination is valid and fair. Based on this information, an appropriate standard or pass mark is set.

Once an acceptable standard has been determined on a form of the examination, a statistical procedure can be performed to establish a corresponding standard on subsequent forms of the examination. This procedure, known as *Test Equating*, takes into account the difficulty of the set of questions on the original and subsequent forms as well as any differences that exists in candidate performance.

The pass mark of the original form is then carried forward and adjusted to reflect the differences in content difficulty and candidate performance on the new form of the examination. This statistical procedure ensures that all candidates, regardless of which examination form they write, must achieve *an equivalent standard to successfully pass the examination*.

Candidates whose final mark is within +/- three (3) marks of the passing score will have their answer sheet hand scored by ASI. This process involves inspection and scoring the answer sheet by hand to ensure no stray pencil marks or

other conditions have interfered with the computer scanning. It is extremely doubtful that any CRSPEX score will change from "fail" to "pass" as a result of hand scoring. In the unlikely event the score changes, the hand score will be final.

Appeals

Because the performance of each question on the CRSPEX that is included in the final score has been pretested, there are no appeal procedures to challenge individual CRSPEX questions, answers, or a failing score. The BCRSP will not release or discuss individual questions with candidates following the CRSPEX. To do so would require elimination of that question from the item bank of pretested questions and deplete the number of pretested questions required to develop future versions of the CRSPEX.

Actions by the Board affecting the eligibility of a candidate to take the CRSPEX may be appealed.

Additionally, appeals may be considered for alleged inappropriate CRSPEX administration procedures or environmental testing conditions severe enough to cause a major disruption of the CRSPEX process and which could have been avoided.

All appeals must be submitted in writing. Eligibility appeals must be received within thirty (30) days of the issuing of CRSPEX results. Appeals for alleged inappropriate administration procedures or severe adverse environmental testing

conditions must be received within sixty (60) days of the release of CRSPEX results.

Notification of CRSPEX Results

Results are mailed to candidates approximately 4-6 weeks after the CRSPEX writing.

It takes approximately a week for all of the examination packages to be delivered to the BCRSP office from the Regional Screening centres across Canada.

Each candidate package is checked to ensure that all of the examination materials have been returned.

The *Answer Sheets* are then forwarded to ASI for marking and analysis. After the marking and analysis is completed, the CRSPEX has a conference call to discuss the results particularly poorly performing items identified by ASI.

Following the conference call, ASI prepares individual examination performance profiles that are sent to the BCRSP office to be forwarded to the candidates with a covering letter.

Candidate results are provided by mail only. Results will not be given out over the telephone, by electronic mail or by facsimile.

Upon Successful Completion of the CRSPEX

If you pass the CRSPEX, there are a number of administrative details that must be completed before you may begin using the CRSP designation.

Once approved to use the *Canadian Registered Safety Professional* and acronym *CRSP®*, you are encouraged to use the designation with your name on correspondence, business cards and all forms of address. Certification is for individuals only. The CRSP designation may not be used to imply that an organization is certified.

If Your CRSPEX Writing is Unsuccessful

If you do not pass the CRSPEX on your first attempt, you may have up to three supplementary writings over the following two-year period. If you do not pass the CRSPEX after four attempts, your file will be closed and you must wait two years before submitting a new application.

Appendices

Appendix A
2005 Examination Blueprint

Appendix B
Sample CRSPEX questions with answers/ justifications

Appendix C
Process for the Development of Questions (Items) for the Board of Canadian Registered Safety Professionals Certification Examination (CRSPEX)

APPENDIX A

2005 Examination Blueprint

BLUEPRINT FOR THE CANADIAN REGISTERED SAFETY PROFESSIONAL EXAMINATION (CRSPEX)

June 2005

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PREFACE

The Board of Canadian Registered Safety Professionals (BCRSP) is pleased to present the *Blueprint for the Canadian Registered Safety Professional Examination (CRSPEX)*. Administration of the first examination developed from the new Blueprint is targeted for May 2006.

The Blueprint was developed to guide those involved in the development of the *Canadian Registered Safety Professional Examination* and to provide the public (e.g., examinees, educators, administrators) with practical information about the examination.

The Blueprint has two major components: (1) the content domain to be measured and, (2) the explicit guidelines on how this content is to be measured. The content domain consists of the CRSPEX set of competencies (i.e., the competencies expected of entry-level registered safety professionals), and the guidelines are expressed as structural and contextual variables. The Blueprint also includes: a *Summary Chart* (p. 10) that summarizes the examination guidelines; a *Glossary* (p. 11) that provides definitions of terms appearing in bold throughout the document; and a *Bibliography* (p.12) of references that were used in creating the Blueprint, or that may interest readers who wish to study certain topics in greater depth.

BCRSP wishes to thank all the individuals who have contributed to the creation of this Blueprint. In particular, thanks are extended to *Canadian Registered Safety Professionals (CRSPs)* across Canada who responded to the competency validation survey.

A comprehensive review of this first edition of the *Blueprint for the Canadian Registered Safety Professional Examination* is planned for 2009. In addition, the Blueprint will be evaluated annually to reaffirm that the competencies and the guidelines for examination development continue to reflect what is expected of an entry-level registered safety professional beginning to practice.

BCRSP encourages all users of this document to provide feedback which may be useful in future revisions of the Blueprint. Please forward all such comments to:

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INTRODUCTION

The Board Canadian Registered Safety Professionals develops the Canadian Registered Safety Professional Examination (subsequently referred to as the CRSPEX) for registering purposes. It fulfills this service by working in collaboration with Canadian Registered Safety Professionals (CRSPs) from across Canada who serve as the content experts in developing and validating the examinations.

Registration/licensure/certification examinations have a well-defined purpose: to protect the public by ensuring that those who are licensed possess sufficient knowledge and skills to perform important occupational activities safely and effectively (Canadian Psychological Association, 1987). In the case of the CRSPEX, the purpose is to determine whether or not examinees are prepared to practice occupational health and safety, without risk to the public and to the environment.

The purpose of this Blueprint is to describe how the examination is to be developed.

The primary function of the Blueprint for the Canadian Registered Safety Professional Examination is to describe how the examination is to be developed. Specifically, this Blueprint provides explicit instructions and guidelines on how the **competencies**¹ (e.g., knowledge, abilities, skills, attitudes, and judgment) are to be expressed within the examination in order for accurate decisions to be made on the ability of examinees to practice safely and effectively.

Prior to producing this Blueprint, BCRSP undertook an extensive study to identify the competencies required for the safe and effective practice of registered safety professionals in Canada. Individual registered safety professionals from across the country were active participants in all phases of the investigation, which served to *identify and validate a comprehensive set of 124 competencies* expected of the registered safety professional. With this set of competencies, and the validation data obtained, the essential components of the CRSPEX could be clearly described.

The periodic and comprehensive review of the competencies measured by the CRSPEX assists the BCRSP in maintaining the validity of the CRSPEX, and to develop psychometrically sound and legally defensible registration examinations. Because of changes that occur in the practice of health and safety professionals, a validation study of the competencies is conducted at least every five years, or as needed. In addition to the periodic comprehensive review and validation study, the competencies are reviewed and evaluated annually by content experts.

¹ The terms appearing in bold are defined in the Glossary.

TECHNICAL SPECIFICATIONS

The following section presents the technical specifications that are to guide the development of the CRSPEX. In the first part, issues related to the competencies are addressed. The second part describes the guidelines to be followed in addressing the structural and contextual variables of the CRSPEX.

COMPETENCIES

The CRSPEX is a **criterion-referenced examination**. That is, a fundamental component of the development of the CRSPEX is a comprehensive description of the content domain being measured. In the case of the CRSPEX, the content domain of interest consists of the competencies a registered safety professional is required to possess in order to practice safely and effectively. These competencies form the basis of the CRSPEX.

This section describes the competencies that were obtained as a result of the validation process, the way they have been grouped, and the manner in which they are to be sampled in the examination development process.

The competencies were evaluated by approximately 1200 Canadian Registered Safety Professionals.

DEVELOPING THE SET OF COMPETENCIES

As a starting point for developing a set of competencies, a Committee on Competencies was formed that was representative of all areas of practice of registered safety professionals in Canada. This committee reviewed various competency lists prepared for health and safety professionals. Using the competency lists, the committee developed a preliminary national set of competencies, and an eleven-category classification to group these competencies. The competencies in this initial set were then evaluated by a sample of approximately 1200 Canadian Registered Safety Professionals (CRSPs), including practitioners, educators, and administrators, who were asked to rate each competency in terms of its applicability, importance and frequency for the registered safety professional. The Committee on Competencies reviewed the results of the survey and eliminated a total of 26 competencies which were rated nationally as less applicable or were considered redundant with other competencies or eligibility requirements. The final set of competencies approved by the Certification and Examination Committee consists of 124 competencies. The CRSPEX Set of Competencies has the primary purpose of providing the content domain for the examination.

COMPETENCY CATEGORIES

The initial classification of the competencies consisted of the following eleven categories defined below (the number and the percentage of competencies are indicated in parentheses following the category name):

1. Accident Theory (6 competencies or 5% of the set of competencies)
2. Environmental Practices (7 competencies or 6% of the set of competencies)
3. Ergonomics (6 competencies or 5% of the set of competencies)
4. Fire Prevention and Protection (14 competencies or 11% of the set of competencies)
5. Health Promotion (7 competencies or 6% of the set of competencies)
6. HSE Auditing (7 competencies or 6% of the set of competencies)
7. Law and Ethics (12 competencies or 10% of the set of competencies)
8. Occupational Health Safety and Environment Management Systems (19 competencies or 15% of the set of competencies)
9. Occupational Hygiene (18 competencies or 15% of the set of competencies)
10. Risk Management (4 competencies or 3% of the set of competencies)
11. Safety Techniques and Technology (24 competencies or 19% of the set of competencies)

Some of the competencies lend themselves to being placed in one or more of the categories, so these eleven categories should be viewed simply as an organizing framework. It should be recognized that the competency statements vary in scope, with some representing global activities and others more discrete and specific actions.

The CRSPEX Set of Competencies (By Group) is presented in the Appendix. The competencies have been grouped using the importance and frequency ratings obtained in the competency validation study.

COMPETENCY GROUPS AND WEIGHTINGS

To ensure that the examination accurately reflects the profile of the registered safety professional, the competencies were grouped according to their relative importance and frequency based on the survey ratings and a quantitative review by content experts.

The CRSPEX Set of Competencies presents the competencies grouped on the basis of the ratings from the validation survey.

Group 1 consists of the **62 competencies** identified as **very important** for the safe and effective practice of registered safety professionals.

Group 2 consists of the **62 competencies** identified as **important** for the safe and effective practice of registered safety professionals.

These groups were used to establish the relative weights the competencies will receive on the examination.

COMPETENCY SAMPLING

Based on the applicability, importance and frequency data extracted from the 2004 Competency Survey, and with the guideline that the CRSPEX will consist of between 190 and 210 questions (see "Examination Length and Format," p. 7), the sampling scheme presented in Table 1 was developed. The distribution of weights in this sampling scheme was selected: (1) to provide differentiation on the rating variables (importance and frequency); and (2) to conform to the examination length requirement.

TABLE 1: COMPETENCY GROUPING AND SAMPLING

Very Important Competencies Group 1: 62 competencies	65-75% of the CRSPEX
Important Competencies Group 2: 62 competencies	25-35% of the CRSPEX

GUIDELINES

In addition to the specifications related to the competencies, other variables must be considered during the development of the CRSPEX. This section presents the guidelines for the following two types of variables:

Structural Variables: Structural variables include those characteristics that determine the general appearance and design of the examination. They define the length of the examination, the format/presentation of the examination questions (e.g., multiple-choice format). The weightings of the eleven categories are also included as structural variables.

Contextual variables: Contextual variables qualify the content domain by specifying the contexts in which the examination questions will be set (i.e., professional context).

STRUCTURAL VARIABLES

1. Examination Length and Format: The examination will consist of between 190 and 210 operational multiple choice questions.

There will be 190 to 210 operational multiple choice questions on the Canadian Registered Safety Professional Examination.

With 124 competencies to measure and a sound sampling approach for these competencies, an examination of between 190 and 210 operational questions is sufficient to make both reliable and valid decisions about an examinee's readiness to practice safely and effectively.

2. Question Presentation: The multiple choice questions of the CRSPEX are presented in one of two formats, case-based or independent questions.
3. Weighting of Competencies by Category: For the purpose of this Blueprint, the eleven categories of the competencies are: (1) Accident Theory; (2) Environmental Practices; (3) Ergonomics; (4) Fire Prevention and Protection; (5) Health Promotion; (6) HSE Auditing; (7) Law and Ethics; (8) Occupational Health Safety and Environment Management Systems; (9) Occupational Hygiene; (10) Risk Management; and (11) Safety Techniques and Technology.

TABLE 2: WEIGHTING OF COMPETENCIES BY CATEGORY

Table 2 presents the percentage range of questions in each of the eleven categories of competencies.

Categories for the Competencies	Percentage of Questions on the CRSPEX
1. Accident Theory	3-5 %
2. Environmental Practices	2-4 %
3. Ergonomics	4-8 %
4. Fire Prevention and Protection	7-11 %
5. Health Promotion	3-5%
6. HSE Auditing	5-7%
7. Law and Ethics	10-14%
8. OHS&E Management Systems	14-18%
9. Occupational Hygiene	13-17%
10. Risk Management	2-4 %
11. Safety Techniques and Technology	20-24 %

CONTEXTUAL VARIABLES

Professional Context: It is recognized that practice environment of entry-level registered safety professionals can be any setting of circumstance within which occupational health and safety may be practiced. The competencies assessed by the examination are not setting dependent. The practice environment will be specified when necessary.

In each setting, the CRSP may act as a consultant or as an in-house safety professional. This will be considered in forming the context of examination items.

The Canadian Registered Safety Professional Examination represents the different focus of practice of registered safety professionals.

CONCLUSION

The *Blueprint for the Canadian Registered Safety Professional Examination* is the product of a collaborative effort between BCRSP and Canadian Registered Safety Professionals (CRSPs). Their efforts have resulted in a compilation of the competencies required of the entry level registered safety professional to practice and of the guidelines on how the competencies will be measured on the CRSPEX. A summary of these guidelines can be found in the Summary Chart: CRSPEX Development Guidelines, on page 10.

It is recognized that the occupational health and safety profession will continue to evolve. As this occurs, the Blueprint (i.e., the competencies and the test development guidelines) may require revision so that it accurately reflects the scope of practice, roles, and responsibilities of the entry level safety professional. CRSPEX will ensure this revision takes place in a timely manner and will communicate it in updated editions of this document.

Summary Chart: CRSPEX Development Guidelines

COMPETENCIES																							
Group 1 -Very important competencies 65-75% of the CRSPEX	Group 2 - Important competencies 25-35% of the CRSPEX																						
STRUCTURAL VARIABLES																							
Examination Length and Format	190–210 operational multiple choice questions. Three and a half (3.5) hours will be allocated for the completion of the examination.																						
Question Presentation	<table> <tr> <td>Independent questions</td> <td>70-90% of questions</td> </tr> <tr> <td>Case-based questions</td> <td>10-30% of questions</td> </tr> </table>	Independent questions	70-90% of questions	Case-based questions	10-30% of questions																		
Independent questions	70-90% of questions																						
Case-based questions	10-30% of questions																						
Competency Categories and Weightings	<table> <tr> <td>1. Accident Theory</td> <td>3-5% of questions</td> </tr> <tr> <td>2. Environment Practices</td> <td>2-4 % of questions</td> </tr> <tr> <td>3. Ergonomics</td> <td>4-8 % of questions</td> </tr> <tr> <td>4. Fire Prevention and Protection</td> <td>7-11 % of questions</td> </tr> <tr> <td>5. Health Promotion</td> <td>3-5 % of questions</td> </tr> <tr> <td>6. HSE Auditing</td> <td>5-7% of questions</td> </tr> <tr> <td>7. Laws and Ethics</td> <td>10-14 % of questions</td> </tr> <tr> <td>8. OHS&E Management Systems</td> <td>14-18% of questions</td> </tr> <tr> <td>9. Occupational Hygiene</td> <td>13-17 % of questions</td> </tr> <tr> <td>10. Risk Management</td> <td>2-4 % of questions</td> </tr> <tr> <td>11. Safety Techniques and Technology</td> <td>20-24 % of questions</td> </tr> </table>	1. Accident Theory	3-5% of questions	2. Environment Practices	2-4 % of questions	3. Ergonomics	4-8 % of questions	4. Fire Prevention and Protection	7-11 % of questions	5. Health Promotion	3-5 % of questions	6. HSE Auditing	5-7% of questions	7. Laws and Ethics	10-14 % of questions	8. OHS&E Management Systems	14-18% of questions	9. Occupational Hygiene	13-17 % of questions	10. Risk Management	2-4 % of questions	11. Safety Techniques and Technology	20-24 % of questions
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10. Risk Management	2-4 % of questions																						
11. Safety Techniques and Technology	20-24 % of questions																						

GLOSSARY

The following is a list of definitions of health and safety, and testing terms as used in the Blueprint.

case-based questions: A set of questions associated with a brief scenario.

competencies: The behaviour statements which reflect the combined knowledge, abilities, skills, attitudes and judgment expected of an entry level registered safety professional.

criterion-referenced (C-R) examination: A test that measures the degree of command of a specified content/skills domain or list of instructional objectives. Scores are interpreted in comparison to a predetermined performance standard, or as a degree of mastery of a defined domain (e.g., percent correct and mastery scores), independently of the results obtained by other candidates. (Brown, 1983)

independent items: Stand-alone objective examination items which contain the information necessary for responding.

operational questions: Questions appearing on the examination that have been pre-tested and that are suitable for the examination. The answer to these questions count in the candidate's score.

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APPENDIX

THE CRSPEX

SET OF COMPETENCIES (BY GROUP)

G1:65-75% CRSPEX
G2:25-35% CRSPEX

ACCIDENT THEORY (AT) The registered safety professional will ...		
AT 1	Demonstrate an understanding of the basic principles of psychological models.	G2
AT 2	Demonstrate an understanding of the basic principles of behaviour-based safety models.	G1
AT 3	Demonstrate an understanding of the basic principles of energy models.	G2
AT 4	Demonstrate an understanding of the basic principles of decision models.	G2
AT 5	Demonstrate an understanding of the basic principles of system safety (engineering) models.	G2
AT 6	Demonstrate an understanding of the basic principles of management models.	G1
ENVIRONMENTAL PRACTICES (EP) The registered safety professional will ...		
EP 1	Possess a basic knowledge of the fundamental objectives, principles and components of an Environmental Management System (EMS).	G2
EP 2	Understand the basic concepts around Canadian environmental legislative and regulatory jurisdictions and agencies, their role, responsibilities and powers.	G2
EP 3	Have a broad knowledge of general applicability of important federal environmentally related legislation, namely, the Canadian Environmental Protection Act; the Fisheries Act; and the Transportation of Dangerous Goods Act.	G2
EP 4	Understand the principal elements of the environment that are the subject of laws and regulations at the Federal level dealing with air, water, waste, hazardous substances and transportation of dangerous goods (TDG).	G2
EP 5	Understand what an emergency preparedness and response plan is, what it is intended to do and why it is important.	G1
EP 6	Define risk estimation, areas of significant risk, preventative maintenance and spill response.	G2
EP 7	Possess the basic knowledge of environmental auditing and know where it is used.	G2

ERGONOMICS (ERG) The registered safety professional will ...		
ERG 1	Possess basic knowledge of the anatomical, physiological and biomechanical principles of ergonomics.	G2
ERG 2	Identify the common signs, symptoms and treatment that contribute to workplace musculoskeletal injuries.	G1
ERG 3	Possess the basic knowledge of the human cognitive, sensory and psychomotor abilities and limitations so that the CRSP can understand how human errors, mental workload, stress and boredom affects human abilities and work performance.	G2
ERG 4	Be able to recognize, evaluate and help control tools, workstations and facilities.	G1
ERG 5	Describe the components of a successful ergonomics program.	G2
ERG 6	Demonstrate an understanding of the basic principles of ergonomic models.	G2
FIRE PREVENTION AND PROTECTION (FPP) The registered safety professional will ...		
FPP 1	Identify the major roles played by the National Fire Prevention Association, Underwriters Laboratory, and Factory Mutual.	G2
FPP 2	Articulate the purpose of the National Building Code and the National Fire Code.	G2
FPP 3	Possess basic knowledge of fire chemistry and fire behaviour allowing the CRSP to understand how fires start and burn, and how fires can be prevented and extinguished.	G1
FPP 4	Understand the essential elements of a fire safety program and demonstrate how a fire safety program may be integrated with larger loss prevention and control programs.	G1
FPP 5	Understand the roles of industrial fire brigades and how fire prevention fits into emergency planning.	G2
FPP 6	Demonstrate an understanding of the use of chemical, explosives and blasting agents, toxic chemicals, halogens and halogenated hydrocarbons, and radioactive chemicals in the workplace, as it relates to fire safety.	G2
FPP 7	Understand the importance of hazard determination and the proper procedures for the handling of combustible solids, combustible metals, and plastics in the workplace, as it relates to fire safety.	G1
FPP 8	Possess knowledge of the basic principles of building construction and understand the importance of considering life safety factors such as facility location and layout in the early stages of building planning.	G2
FPP 9	Understand approaches for assuring life safety and understand the importance of building codes and building practices.	G2
FPP 10	Have a basic understanding of the different types of fire detection systems, their advantages and disadvantages.	G2
FPP 11	Possess the basic knowledge of fire control systems.	G2
FPP 12	Understand the basic principles of fire sprinkler and portable extinguisher maintenance and inspection.	G2

FPP 13	Understand the legal responsibilities and liabilities of upper management, safety managers, middle managers and employees, as it relates to fire safety.	G1
FPP 14	Understand the basic principles of the fire department incident command system (ICS), and outline the ways that safety professionals interact with fire officials during emergency situations.	G2
HEALTH PROMOTION (HP) The registered safety professional will ...		
HP 1	Identifies key features of a substance abuse program.	G2
HP 2	Identifies key features of a stress control program.	G2
HP 3	Identifies key features of an employee assistance program.	G2
HP 4	Identifies key features of a modified work and return to work program.	G1
HP 5	Identifies key features of a worker's compensation and disability management program.	G1
HP 6	Understand the determinants of health, including environmental, genetic, social, economic, physiological and lifestyle determinants.	G2
HP 7	Understand how the psychosocial work environment and work/life balance influence employee health.	G2
HSE AUDITING (AUD) The registered safety professional will ...		
AUD 1	Possess basic knowledge of established HSE audit principles and techniques.	G1
AUD 2	Demonstrate the application of audit data collection techniques.	G1
AUD 3	Possess the ability to interpret and analyze audit data to generate meaningful information/opinion.	G1
AUD 4	Possess basic knowledge of interviewing, verifying, evaluating, communicating and reporting skills.	G1
AUD 5	Possess knowledge required to develop, apply and improve auditing tools and processes.	G2
AUD 6	Understand the difference between a compliance audit and a management system audit.	G2
AUD 7	Understand the difference between an inspection and an audit.	G1
LAW AND ETHICS (LE) The registered safety professional will ...		
LE 1	Demonstrate an understanding of common concepts in Provincial Occupational Health and Safety Law, such as, due diligence and the internal responsibility system.	G1
LE 2	Possess basic knowledge of Federal Occupational Health and Safety Law.	G1
LE 3	Identify the key features of Provincial Worker's Compensation Law.	G1
LE 4	Demonstrate an understanding of Environmental Law.	G2
LE 5	Understand the concepts around ethical theories and perspectives.	G2
LE 6	Understand the concepts around the obligations to employers and co-workers.	G1
LE 7	Understand the concepts around the obligation to the public.	G1

LE 8	Understand the concepts around the obligations to fellow professionals.	G1
LE 9	Understand the BCRSP's Code of Ethics.	G1
LE 10	Understand the consequences of professional errors or omissions.	G1
LE 11	Understand the laws relating to conflict of interest.	G2
LE 12	Able to apply codes of professional conduct.	G1
OHS&E MANAGEMENT SYSTEMS (OES) The registered safety professional will ...		
OES 1	Identify key features of organizational structure and teams.	G2
OES 2	Demonstrate an understanding of the basic knowledge of total quality management.	G2
OES 3	Identifies key features of management processes.	G2
OES 4	Possess basic knowledge around capital budgeting and long range planning.	G2
OES 5	Possess basic knowledge about the classical approaches to management.	G2
OES 6	Applies principles of the problem solving processes in management.	G1
OES 7	Demonstrate an understanding of how to manage conflict.	G1
OES 8	Demonstrate an understanding of labour relations including union/management committees.	G1
OES 9	Understand the basic planning process, including strategic planning.	G2
OES10	Identify key features of different leadership styles.	G2
OES11	Understand the basic concepts around innovation and change.	G2
OES12	Understand the basic methods around motivation.	G1
OES13	Possess basic knowledge around training.	G1
OES14	Demonstrate an understanding of adult learning skills.	G1
OES15	Able to set up an effective learning environment by classroom layout etc.	G1
OES16	Possess basic knowledge around mediation and facilitation as it relates to ohs&e.	G1
OES17	Understand basic concepts around current safety management principles.	G1
OES18	Understand how to build a safety program.	G1
OES19	Understand basic concepts of risk analysis (probability).	G1
OCCUPATIONAL HYGIENE (OH) The registered safety professional will ...		
OH 1	Possess basic knowledge of anatomy, physiology and some pathology related to occupational hygiene, for example, that of the lungs, ears, eyes and skin.	G1
OH 2	Possess basic knowledge of industrial toxicology and understand routes of entry of toxic materials into the body.	G1
OH 3	Possess basic knowledge of gases, vapours and solvents.	G1
OH 4	Possess basic knowledge of industrial noise.	G1
OH 5	Possess basic knowledge of vibration.	G2
OH 6	Possess basic knowledge of ionizing radiation.	G2
OH 7	Possess basic knowledge of nonionizing radiation.	G2
OH 8	Possess basic knowledge of thermal stress.	G2
OH 9	Possess basic knowledge of biological hazards.	G1

OH 10	Possess basic knowledge of indoor air quality.	G1
OH 11	Demonstrate an understanding of the evaluation process of occupational hygiene, for example air, noise and radiation sampling.	G1
OH 12	Possess basic knowledge of ventilation.	G2
OH 13	Possess basic knowledge of respiration protection.	G1
OH 14	Understand the role of the occupational hygienist.	G2
OH 15	Possess basic knowledge of threshold limit values and biological indices.	G1
OH 16	Understand the concepts around administrative controls.	G1
OH 17	Able to use various analytical equipment, such as sampling equipment, in order to measure ambient and baseline levels.	G2
OH18	Possess basic knowledge of lasers.	G2
RISK MANAGEMENT (RM)		
The registered safety professional will ...		
RM 1	Possess basic knowledge of security.	G2
RM 2	Possess basic knowledge of product liability and safety.	G2
RM 3	Possess basic knowledge of major industrial disasters.	G2
RM 4	Understand basic concepts around risk management.	G1
SAFETY TECHNIQUES AND TECHNOLOGY (STT)		
The registered safety professional will ...		
STT 1	Demonstrate an understanding of the basic principles of workplace inspections.	G1
STT 2	Demonstrate an understanding of the basic principles of accident investigation.	G1
STT 3	Demonstrate an understanding of the basic principles of task analysis.	G1
STT 4	Demonstrate an understanding of the basic principles of material flow analysis.	G2
STT 5	Demonstrate an understanding of the basic principles of fault tree analysis.	G2
STT 6	Possess basic knowledge of facilities, from their general design, layout, construction and maintenance.	G2
STT 7	Able to manage safety through design processes.	G2
STT 8	Possess basic knowledge of safeguard systems such as: point-of-operation protective devices, point-of-operation safeguards, the guarding of power transmission, robotics safeguarding, control of hazardous sources, and the maintenance and servicing of such devices.	G1
STT 9	Possess basic knowledge of personal protective equipment.	G1
STT 10	Possess basic knowledge of electrical safety.	G1
STT 11	Possess basic knowledge of materials handling and storage.	G1
STT 12	Possess basic knowledge of hoisting and conveying equipment, including ropes, chains and slings.	G1
STT 13	Possess basic knowledge of powered industrial trucks.	G1
STT 14	Possess basic knowledge of hand and portable tools.	G1
STT 15	Possess basic knowledge of woodworking machinery.	G2
STT 16	Possess basic knowledge of welding and cutting.	G2
STT 17	Possess basic knowledge of metalworking machinery.	G2
STT 18	Possess basic knowledge of automated systems, or processes.	G2

STT 19	Possess basic knowledge of chemical process safety.	G1
STT 20	Possess basic knowledge of confined spaces.	G1
STT 21	Possess basic knowledge of fall protection.	G1
STT 22	Possess basic knowledge of pressure hazards and protection.	G1
STT 23	Able to identify and interpret design deficiencies based on past performance in order to improve system designs.	G2
STT 24	Able to apply the knowledge to design record keeping systems which allows for collection, storage, interpretation, dissemination and safeguarding.	G1

APPENDIX B**Sample CRSPEX Questions with Answers/Justifications*****Accident Theory (AT)***

1. *Unwanted energy flow is:*

- A. Uncontrolled energy flow that can be directed to do unwanted work.
- B. A high-energy component involved in an energy release.
- C. A by-product of high-energy environment production.
- D. A term used in the field of stress management.

2. *ISMEC is the acronym for:*

- A. Illustrating work, Starting task, Mentoring worker, Estimating difficulty, Commending success.
- B. Illuminating roles, Sending signals, Managing stress, Evaluating performance, Counting mistakes.
- C. Identification of work, Standards established, Measuring performance, Evaluating performance, Correcting deficiencies (and commending success).
- D. Identification of risks, Standards of performance, Managing people, Evaluating performance, Correcting mistakes (and commending success).

Environmental Practices (EP)

3. *A medium size company that continually engages in environmentally hazardous activities has:*

- A. Considered the potential effects of failing to have a corporate environmental policy.
- B. Staffed technically competent professionals with environmental responsibility.
- C. Failed to consider the potential benefits of an active environmental management system.
- D. Funded environmental programs with senior management commitment.

4. *One purpose of an environmental audit is to:*

- A. Assess the management systems related to environmental issues.
- B. Review environmental risks associated with the site and site operation.
- C. Identify staff with environmental responsibilities.
- D. Review training records of staff tasked with handling environmentally sensitive substances.

Ergonomics (ERG)

5. *One kind of muscular effort can be described as static. Static effort is characterized as:*

- A. An alternation between contraction and extension of the muscles.
- B. Tension and relaxation of the muscles.
- C. A prolonged state of contraction of the muscles.
- D. Change in rhythm of the muscle length.

6. *When evaluating repetitive work, the key factors to be considered include:*

- A. The average number of lifts per minute over a fifteen-minute period.
- B. The duration of the shift and the repetition rate and recovery time provided.
- C. The position of the joints when the task is performed; the force exerted and the repetition rate or amount of recovery time provided.
- D. The level of fatigue and boredom that may affect the worker's ability to perform the task well.

Fire Prevention and Protection (FPP)

7. *A systematic approach to fire protection systems' inspection, testing and maintenance should follow guidelines established by the manufacturers and by:*

- A. NFPA
- B. NRC
- C. Factory Mutual
- D. Underwriters' Laboratories

8. *In Canada, the National Building Code and the National Fire Code are developed under the:*

- A. Underwriters Laboratories Canada Inc.
- B. Factory Mutual
- C. Canadian Standards Association
- D. National Research Council

Health Promotion (HP)

9. *A treating physician can provide the following information to the employer about an injured worker:*

- A. The patient's treatment for healing
- B. A diagnosis of patient's condition.
- C. A prognosis of patient's condition.
- D. Any restrictions on patient activities.

10. *A strategy that gives structure and organization to the activity of returning injured workers to the workplace as soon as possible following a work related accident is a definition of a:*

- A. Modified Work Program
- B. Claims Management Program
- C. Vocational Rehabilitation Program
- D. Disability Management Program

Law and Ethics (LE)

11. A 'procedural' approach to regulation:

- A. Sets a general standard that you must meet without much concern about how you meet it.
- B. Sets out the requirements of procedural justice.
- C. Sets out the rules of the Court.
- D. Sets out detailed rules telling you how to reach a standard.

12. A 'privative clause':

- A. Is a provision in a contract that is secret.
- B. Is a clause that concerns the legal right to hygiene facilities in the workplace.
- C. Prevents a person from appealing an administrator's decision.
- D. Prevents people from opting out of the OHS system through contract.

Occupational Health Safety and Environment Systems (OES)

13. The effective manager in the emerging workplace recognizes as foundational goals:

- A. High productivity and low operating costs.
- B. High performance and low labour conflict.
- C. High performance and satisfaction among team members.
- D. High productivity and low loss rates.

14. In the field of management theory, "Theory Z" refers to:

- A. High-risk, potentially high-return preferences.
- B. Managing by cultural norms.
- C. Adherence to Japanese management principles.
- D. Eastern European management principles.

Occupational Hygiene (OH)

15. A worker in a noisy environment was monitored for 8 hours and subject to the following exposures. 4 hrs at 80dBA (allowable exposure time 24 hours), 2 hrs at 85dBA (allowable exposure time 8 hrs), and 2 hours at 90dBA (allowable exposure time 2 hrs). During the 8 hours was the worker:

- A. Overexposed.
- B. At the allowable exposure level.
- C. Not overexposed.
- D. Significantly overexposed.

16. Which chemical exposure was associated with a liver cancer called angiosarcoma?

- A. Trichloroethylene.
- B. Vinyl chloride
- C. Lead
- D. Asbestos

Risk Management (RM)

17. The safety practitioner will approach risk management as:

- A. A management system directed at influencing worker behaviour, with emphasis on worker safety and health.
- B. A system designed to manage quality and process safety.
- C. A system-wide assessment of risks and risk control, with emphasis on worker safety and health.
- D. A responsibility for the safety practitioner to document all workplace related risks and develop controls for the identified risks.

18. Perceptions of risk may affect the tolerance for certain types of hazards. Which of the following may bias the judgement of one of the affected parties?

- A. Scientific evidence not containing sufficient evidence to support a potential for harm.
- B. Value assumptions; or, subjective interpretations of evidence based on personal or societal values.
- C. The principle of achieving a technically agreeable control measure.
- D. All occupational hazards should be measure using the 'precautionary principle'.

Safety Techniques and Technology (STT)

19. The term 'protective factor' in respiratory protection is used to describe:

- A. The overall life expectancy the user can expect to get from the equipment.
- B. The overall effectiveness of a respirator and the nature of contaminants.
- C. The degree of inhalation resistance the equipment's material has been rated for.
- D. The amount of training the wearer is required to have before using the equipment.

20. Portable conveyors are equipped with skirtboards or sideboards because:

- A. They permit access to the point of operation.
- B. They provide complete guarding of the in-running nip hazard.
- C. They prevent operators from reaching into the conveyor.
- D. They keep material from falling over the sides.

HSE Auditing (AUD)

21. *What are two major classifications of documents that are reviewed in an audit?*
- A. Policies and procedures.
 - B. Directive documents and blank forms.
 - C. Directive documents and operational records.
 - D. Minutes of JHSC meetings and operational records.
22. *What is the best description of a health and safety audit?*
- A. A workplace inspection conducted by trained auditors.
 - B. A secondary tool for assessing the health and safety legislative compliance.
 - C. A gap analysis between the company's current oh&s management system and a set of standards.
 - D. A workplace inspection conducted by health and safety professionals.
23. *When conducting a document review of inspection reports, what sample of documents should the auditor review?*
- A. All of the inspection reports for the last three years.
 - B. A representative sample of inspection reports sufficient enough for the auditor to assess them.
 - C. The most current five inspection reports.
 - D. Whichever inspection reports the company representative provides to the auditor.
24. *What type of audit would involve reviewing a policy statement, then checking training records, equipment and log books?*
- A. Compliance Audit.
 - B. Claims Management Audit.
 - C. Management System Audit.
 - D. Performance Audit.

Case Study - Occupational Hygiene (OH)

Occupational dermatitis represents one of the most common forms of occupational disease. The significance of dermal [skin] absorption in terms of overall body burden of chemicals is still largely unknown.

In 1997, a single incident focused the attention of health and safety professionals on to the seriousness of dermal exposure. A professor of chemistry died of mercury intoxication, days after a brief exposure to dimethyl mercury. The occasion occurred in the laboratory when the chemical leaked across a latex glove.

1. *How could this fatality have been prevented?*

- A. The ventilation rate in the laboratory fumehood could have been increased, thereby increasing the evaporation rate.
- B. The professor of chemistry should have recognized the hazard and taken appropriate precautions.
- C. The glove selection should have been impermeable to the chemical used.
- D. The latex glove may have been old or compromised.

2. *How could a safety practitioner have assisted in a prevention program?*

- A. The CRSP could have checked the fumehood flow rate and set out a regular maintenance schedule.
- B. The CRSP could have completed a risk assessment, noting the chemicals and PPE in use.
- C. The CRSP could have initiated a chemical inventory program for the laboratory.
- D. The CRSP could have completed a risk assessment, noting the chemicals and PPE in use, for the laboratory manager with recommended controls.

3. *What is the most common approach used to assess skin exposure to a contaminant?*

- A. Biological monitoring is commonly used to assess total body burden of chemical contaminants.
- B. Critical flux is the dose resulting from inhalation exposure combined with dermal exposure.
- C. Using pads or dosimeters to determine the amount of contaminant deposited on the skin.
- D. There is no recognized approach to assess skin exposure to a contaminant.

ANSWERS FOR SAMPLE CRSPEX QUESTIONS AND CASE STUDY***Accident Theory (AT)*****Question 1: Correct answer - B**

Justification: The choice of A is clearly wrong with the inclusion of the words ‘unwanted work’. C and D are distracters using ‘by-product’ and ‘stress management’ inappropriately. The energy models discussed in the Study Guide emphasize the release of unwanted energy as a component of accident causation.

Source: BCRSP’s *Guide to Registration – Accident Theory (AT) Study Guide, Energy Models (Ball’s Energy Model) and CAN/CSA-Z796-98*

Question 2: Correct answer - C

Justification: This illustrated an important change in accident theory between the earlier Bird theory along with Heinrich’s original model of ‘blaming’ the worker for accidents, and a shift to a systems or management control model. A, B and D were all used as distracters in this question.

Source: BCRSP’s *Guide to Registration – Accident Theory (AT) Study Guide, Bird’s up-dated accident sequence.*

Environmental Practices (EP)**Question 3: Correct answer: C**

Justification: All of the answers could apply to a medium size company; however, the question relates to ‘continual risky activities’ and therefore the only correct answer would be C.

Source: *Accident Prevention Manual for Business and Industry, 2nd Edition, Environmental Management, National Safety Council, p. 343-344*

Question 4: Correct answer: B

Justification: The audit is conducted to ‘review environmental risks’ not ‘assess’ or ‘identify’. Training records of staff should be part of the company personnel safety and environmental procedures and do not form part of an environmental audit process.

Source: *Accident Prevention Manual for Business and Industry, 2nd Edition, Environmental Management, National Safety Council, p. 347*

Ergonomics (ERG)

Question 5: Correct answer: C

Justification: The correct answer is related to only one state; static, means virtually unmoving. Therefore 'a prolonged state of contraction' clearly describes the circumstance.

Source: *Fitting the Task to the Human*, 5th Edition, K.H.E. Kroemer and E. Grandjean, Taylor and Francis, p. 7

Question 6: Correct answer: C

Justification: Although all of the answers contain some element of truth, C is the only one that gathers all of the factors together; duration, rate, force and repetition/recovery.

Source: *Accident Prevention Manual for Business and Industry*, 12th Edition, Administration and Programs, National Safety Council, Ergonomic Program Repetitive Work, p. 405

Fire Prevention and Protection (FPP)

Question 7: Correct answer: A

Justification: NFPA Standards have been adopted by many Canadian jurisdictions giving them the force of law when referenced in a regulation or code. B, C, and D all refer to standard making organizations; however their guidelines and standards often defer to, or reference the National Fire Protection Association Standards.

Source: BCRSP's *Guide to Registration – Fire Prevention and Protection (FPP) Study Guide*, Care, Maintenance and Inspection and *The Fire Safety Management Handbook*, 2nd Edition, Daniel E. Della-Giustina, Ph.D., American Society of Safety Engineers

Question 8: Correct answer: D

Justification: The NRC develops the Codes on a consensus basis through committees of various stakeholders.

Source: BCRSP's *Guide to Registration – Fire Prevention and Protection (FPP) Study Guide*, Care, Maintenance and Inspection and *The Fire Safety Management Handbook*, 2nd Edition, Daniel E. Della-Giustina, Ph.D., American Society of Safety Engineers

Health Promotion (HP)

Question 9: Correct answer: D

Justification: Confidentiality of medical information limits the physician's ability to provide the employer with any information on the patient other than that described in D.

Source: *Disability Management: Theory, Strategy and Industry Practice*, Dianne Dyck, Butterworths

Question 10: Correct answer: D

Justification: The key to this question is the descriptor, ‘strategy that gives structure and organization’. Thus, a disability management program may contain all the other programs in its scope.

Source: *Disability Management: Theory, Strategy and Industry Practice*, Dianne Dyck, ISBN 0-433-42413-3, Butterworths

Law and Ethics (LE)

Question 11: Correct answer: D

Justification: A regulation is the *detailed* legal authority, whereas an Act is the *basic* legal authority. Some jurisdictions are including *performance* standards into their procedural regulations; this will allow the organization to measure their procedures against the minimum legal standard for compliance.

Source: *Occupational Health and Safety Law*, Dr. Peter Strahlendorf, CRSP, School of Occupational and Public Health, Ryerson University

Question 12: Correct answer: C

Justification: Workers’ compensation is a provincial matter. The study guide confirms that CRSP’s need to know the various compensation regimes in which they operate. Privacy clauses exist in compensation law to limit the appeal process. For example: ‘an action or decision of the _____ under this Act is final and is not open to question or review in a court.’

Source: *Occupational Health and Safety Law*, Dr. Peter Strahlendorf, CRSP, School of Occupational and Public Health, Ryerson University

Occupational Health Safety and Environment Systems (OES)

Question 13: Correct answer: C

Justification: The author emphasizes that C result in *sustained performance* of the team members.

Source: BCRSP’s *Guide to Registration – Occupational Health Safety and Environment Systems (OES) Study Guide*, “Managers and Organizations”

Question 14: Correct answer: C

Justification: The answer is discussed in the study guide under OES, Comparative Management Practices. Theory Z (Wm. Ouchi) refers to Japanese management practices and business success.

Source: BCRSP’s *Guide to Registration – Occupational Health Safety and Environment Systems (OES) Study Guide*, “Comparative Management Practices”

Occupational Hygiene (OH)

Question 15: Correct answer: A

Justification: Without regard for possible differences in jurisdictional approach to allowable exposure to noise, the participant is being asked to solve this question using a mathematical formula available in most hygiene resource manuals. When the daily noise exposure is composed of two or more periods of exposure at different levels, the combined effect should be considered. If the sum of the fractions of the exposure exceeds 100%, then the mixed exposure should be considered to exceed the allowable limit value.

$$D = \frac{C_1}{T_1} + \frac{C_2}{T_2} + \frac{C_3}{T_3} + \dots + \frac{C_n}{T_n}$$

D = dose; C = exposure time at a particular level; T = total time allowed at that noise level.

Source: BCRSP's *Guide to Registration – Occupational Hygiene (OH) Study Guide* and *The Occupational Environment – Its Evaluation and Control*, Salvatore R. DiNardi, Editor, American Industrial Hygiene Association, Noise, Chapter 20, p. 436

Question 16: Correct answer: B

Justification: This association of chemical exposure to vinyl chloride monomer, resulting in a rare form of liver cancer, has been published in occupational hygiene literature for the past 15 years.

Source: *The Occupational Environment – Its Evaluation and Control*, Salvatore R. DiNardi, Editor, American Industrial Hygiene Association, Occupational Toxicology, p. 81

Risk Management (RM)

Question 17: Correct answer: C

Justification: C is the only possible correct choice, as risk management has nothing to do with 'influencing worker behaviour' or 'quality and process safety'. It is no longer acceptable to 'blame the worker' as a result of assessing risk. Nor does risk management direct the safety practitioner to 'develop controls' for all identified risks.

Source: BCRSP's *Guide to Registration – Risk Management (RM) Study Guide*, What is Risk Management Source listed, "Risk Management; a Primer for Canadians", 1.1-1.3

Question 18: Correct answer: B

Justification: The correct answer contains language that should be a dead give-away, 'subjective interpretation' based on 'personal values'.

Source: BCRSP's *Guide to Registration – Risk Management (RM) Study Guide*, Decision Making in Risk Management Primer, 1.12-1.18

Safety Techniques and Technology (STT)

Question 19: Correct answer: B

Justification: The assigned protective factor (APF) of respirators has been published by NIOSH and ANSI. The three other possible answers are all distracters.

Source: BCRSP's *Guide to Registration – Safety Techniques and Technology (STT) Study Guide and Accident Prevention Manual for Business and Industry*, 12th Edition, Administration and Programs and Engineering and Technology, National Safety Council, personal protective equipment

Question 20: Correct answer: D

Justification: There may be an element of truth to A, B and C; however, skirting and sideboards describe a specific control to prevent material from falling from a conveyor. Portable conveyors require the same level of guarding as do fixed conveyor systems.

Source: *Accident Prevention Manual for Business and Industry*, 12th Edition, Administration and Programs and Engineering and Technology, National Safety Council, personal protective equipment, p. 481

HSE Auditing (AUD)

Question 21: Correct answer: C

Justification: Both items in A and B relate to directive documents and both items in D are operational records.

Source: BCRSP's *Guide to Registration – OHS Auditing (AUD) Study Guide*, p. 17.

Question 22: Correct answer: C

Justification: The audit is not an inspection, nor is it used to address compliance issues; it is specifically a tool measuring the status of the health and safety management system compared to established standards (which make up the audit instrument elements and sub elements). The gap between the system and the standard is addressed with recommendations.

Source: BCRSP's *Guide to Registration – OHS Auditing (AUD) Study Guide*, p. 3.

Question 23: Correct answer: B

Justification: The auditor must ensure that sufficient documentation is reviewed to be able to evaluate a company's health and safety system.

Source: BCRSP's *Guide to Registration – OHS Auditing (AUD) Study Guide*, p. 19.

Question 24: Correct answer: A

Justification: A compliance audit looks at regulations and/or company policy and measures the level of compliance.

Source: BCRSP's *Guide to Registration – OHS Auditing (AUD) Study Guide*, p. 17.

Case Study (Occupational Hygiene)

Case Study 1: Correct answer: C

Justification: A is clearly wrong, as the ventilation plays no role in this scenario. B is wrong as we must not 'blame the worker' and the professor may have known all the chemical hazards related to the dimethyl mercury, but was unaware of the permeability of the selected latex glove. *Please refer to the Accident Theory (AT) domain with regard to safety systems and Fault Tree analysis. The latex is the culprit here as it readily breaks down in the presence of solvents and was not the glove material of choice. D has no import, as the age or condition of the latex would not have mattered in this case.

Source: *The Occupational Environment – Its Evaluation and Control*, Salvatore R. DiNardi, Editor, American Industrial Hygiene Association, Dermal Exposure, p. 286

Case Study 2: Correct answer: D

Justification: The answer includes all aspects of the CRSP's role, identifying risk, recommending controls and presenting the findings to a supervisor in charge of the workplace.

Source: *The Occupational Environment – Its Evaluation and Control*, Salvatore R. DiNardi, Editor, American Industrial Hygiene Association, Dermal Exposure, p. 286

Case Study 3: Correct answer: C

Justification: A is correct but has no relationship to the question. B is also correct but talks about a definition of a particular dose, not exposure. D is incorrect by any standard.

Source: *The Occupational Environment – Its Evaluation and Control*, Salvatore R. DiNardi, Editor, American Industrial Hygiene Association, Dermal Exposure, p. 286

APPENDIX C

Process for the Development of Questions (Items) for the Board of Canadian Registered Safety Professionals Certification Examination (CRSPEX)

This document outlines the process used by the Board of Canadian Registered Safety Professionals (BCRSP) in the development of CRSPEX questions (items). Multiple-choice questions are developed to assess a sample of the knowledge, skills, abilities, attitudes and judgments (**competencies**) expected of an entry-level registered safety professional. There are two types of multiple-choice questions on the CRSPEX – case-based and independent.

CASE-BASED MULTIPLE-CHOICE ITEMS

A case is a set of two or more multiple-choice items associated with a brief scenario. The scenario (case text) is written prior to formulating the associated items. The following guidelines are used by item writers in developing cases:

- Describe an ohs&e situation.
- Write the case in simple, concise and precise language.
- Provide all necessary information but do not include extraneous information that may confuse the candidate.

INDEPENDENT MULTIPLE-CHOICE ITEMS

There are four steps followed when multiple-choice items are developed: (1) the competency is examined, (2) the stem is created, (3) the correct response is written and (4) the distracters are formulated.

Step 1: Examine the Competency

- The competency must be read and thoroughly understood.
- If the meaning of a competency is not understood, one of the other item writers or the item writing facilitator must be consulted.
- The item is written to reflect the competency.

Step 2: Create the Stem

- The stem must be presented as a complete sentence.
- As much of the wording as possible is written in the stem, rather than in the options.
- The stem must be clear and concise providing all of the necessary information to enable the candidate to select an option.
- The stem must be stated in a positive form.

Step 3: Write the Correct Response

- Current reference texts/articles (published within the past 5 years) must be cited to identify the correct response. If it is difficult to locate a reference that relates directly to the content of a particular item, the reference chosen must support the general principle addressed in the question. References should be well-known and easily accessible to the candidate.

- A response must be provided that experts are likely to agree on as the *best* of the options provided. A correct response cannot be chosen that is contradicted by other reference sources.

Step 4: Formulate the Distracters

- An important feature of the correct response is omitted or an incorrect or irrelevant feature is introduced.
- The types of errors less proficient candidates are likely to make should be anticipated.
- All of the distracters must be plausible and homogeneous (e.g., if the stem asks for an action, each option must be presented as an action).

DEVELOP RATIONALES

By providing a rationale for why the correct response is correct, the likelihood of creating an inaccurate or ambiguous question will be minimized. The following guidelines are used:

- The rationale must indicate why an option is correct. The explanation does not need to be exhaustive.
- The rationale may be written in point form.

GROUP REVIEW OF ITEMS

Each item is presented to the item writing group for comments and suggestions. When the group has agreed that an item meets the guidelines for CRSPEX questions, the item is approved. This activity verifies the quality and accuracy of the items that are developed.

REVIEW OF ITEMS BY CRSPEC

The Certification and Examination Committee (CRSPEC) reviews and approves items prior to their adoption and use on the CRSPEX.

ESSENTIAL STEPS TO CREATE QUALITY CRSPEX ITEMS

- Ensure that the item measures the targeted competency.
- Direct the difficulty level of the question toward the entry-level registered safety professional.
- Avoid textbook language and technical jargon. Use simple language.
- Avoid sex bias and racial or cultural stereotypes.
- Phrase items in the third person (e.g., What should **the registered safety professional** recommend?) because the use of the second person (e.g., What would **you** recommend?) introduces an element of subjectivity into the question.
- Ensure consistency in spelling. If a word does not appear in the dictionary, an accepted current publication may be used as a reference for spelling.
- Express units of measurement according to the International System of Units (SI).
- Avoid the use of abbreviations, except for common, standard ones. When using acronyms, write the term in full, followed by the acronym in parentheses. Subsequent citations of the term within a question need only include the acronym..
- Make all of the options comparable in length.
- Make all of the options grammatically consistent with the stem.

- Avoid the repetition of key words or phrases in each option.
- Do not use “All of the above,” “None of the above,” or combined responses (e.g., A and B) as options.
- When developing case-based items, do not put any information in the stem that will guide the candidate in correctly answering other questions within the case.