



*Canadian  
Registered  
Safety  
Professional  
Examination (CRSPEX)*

**2005 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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## ***2005 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) as of January 1, 2005.

**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 a current *CRSPEX Candidate Handbook* and information about the CRSP certification program to:

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All eligible candidates will receive notification by mail 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.

### **Membership/Affiliation**

The BCRSP is a member of the U.S.-based National Organization for Competency Assurance ([www.noca.org](http://www.noca.org)) and has a *Memorandum of Understanding (MOU)* with the Board of Certified Safety Professionals ([www.bcsp.org](http://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](http://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, 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 Board's *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 ten domains (subject matter) – *Accident Theory, Environmental Practices, Ergonomics, Fire Prevention and*

*Protection, Health Promotion, 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 the 31 *Regional Screening Centres* across Canada. Once approved by the Governing Board, certified professionals are entitled to use the designation “CRSP” after their names. The designation is valid from the date you are approved 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 (currently \$125).

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 BCRSP’s web site ([www.bcrsp.ca](http://www.bcrsp.ca)).

The *CMP* is based around calendar years 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 2005 CRSPEX, your first *CMP* cycle officially begins January 1, 2006. However, *CMPs* earned in the period between the passing of the CRSPEX (eg – May 2005) 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 ten domains (123 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 123 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). 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* (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. At the discretion of the *Certification and Examination Committee*, there may be included up to 25 *experimental questions* (Questions appearing on the examination that are being tested to determine their suitability for use on future versions of the examination.) that will not be used to compute candidate scores. *Experimental questions* will be disbursed within the CRSPEX and you will not be able to determine which of the questions are experimental and which will be included in your score. This is necessary to ensure that candidates answer experimental questions in the same manner as they do scored questions. This allows the question to be validated as accurate and

appropriate before it is included as a measure of candidate competence.

With 123 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 courses.*

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 noted on the *CRSPEX Notice* 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 31 *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 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 an alphanumeric keypad

and **does not** have the capability to print, store or retrieve data.

### **Following the CRSPEX**

A CRSPEX questionnaire will be mailed to you approximately one week after the writing date. You are encouraged to submit your comments to the Board. 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 ten 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, other acts of God 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 initial BCRSP action. 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 is closed and you must wait two years before submitting a new application.

## **Appendices**

### *Appendix A*

2000 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

## 2000 Examination Blueprint

The Board conducted a *Survey on the Competencies Required of Certified Safety Professionals in Canada* in late 2004. The data from this survey will form the basis of a revised *2005 Examination Blueprint* that will be used to draft the 2006 CRSPEX.



BLUEPRINT  
FOR THE  
CANADIAN REGISTERED SAFETY  
PROFESSIONAL EXAMINATION (CRSPEX)

December 2000

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APPENDIX B

Sample CRSPEX Questions with Answers/Justifications
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***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.

*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*, 5<sup>th</sup> 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*, 12<sup>th</sup> 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*, 2<sup>nd</sup> 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*, 2<sup>nd</sup> 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
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*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
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*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
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*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
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*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*, 12<sup>th</sup> 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*, 12<sup>th</sup> Edition, Administration and Programs and Engineering and Technology, National Safety Council, personal protective equipment, p. 481

***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
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*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.