



**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**

**Bid Receiving
PWGSC
33 City Centre Drive
Suite 480C
Mississauga
Ontario
L5B 2N5
Bid Fax: (905) 615-2095**

**SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

**Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution
Public Works and Government Services Canada
Ontario Region
33 City Centre Drive
Suite 480
Mississauga
Ontario
L5B 2N5

Title - Sujet Occupational Hygiene Instructor	
Solicitation No. - N° de l'invitation W0113-16CS06/A	Amendment No. - N° modif. 002
Client Reference No. - N° de référence du client W0113-16CS06	Date 2016-11-02
GETS Reference No. - N° de référence de SEAG PW-\$TOR-302-7173	
File No. - N° de dossier TOR-6-39041 (302)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2016-11-08	
Time Zone Fuseau horaire Eastern Standard Time EST	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Berends, Robert	Buyer Id - Id de l'acheteur tor302
Telephone No. - N° de téléphone (905) 615-2465 ()	FAX No. - N° de FAX (905) 615-2060
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

This amendment is being raised to answer questions to date, add Appendices, and to correct an email address.

At Article 6.5.1 Contracting Authority:

Delete: E-mail address: Robert.berends@pwgsc.tpsgc.gc.ca

Insert: E-mail address: Robert.berends@pwgsc-tpsgc.gc.ca

At Annex A, Statement of Work:

Add: Please see attached Appendices.

Questions and Answers

Q1. - Is the requirement to have one of the specified degrees AND a certificate in Adult Learning?

A1. – Yes.

Q2. - What is the rubric or matrix for assignment of 120 points?

A2. – 60 points total per person, 12 points each section.

Q3. – For Proof of education for Occupational Health and Safety, Is there a rubric or matrix which outlines the number of points?

A3. – This is not a point rated criteria.

Q4. - If more than one Key Person is proposed as an instructor for the project, how would the overall score for this section be calculated?

A4. – Best proposed individual score will be used.

Q5. - How many university degree credits are to be awarded?

A5. – Contractor to determine.

Q6. - Would evidence that a Canadian university accepted the material as equivalent to a full course in occupational hygiene and was willing to grant credit for said course to graduates of the RFP's program be sufficient?

A6. – No evidence is required. Just acknowledgement in the proposal.

Q7. – For proof of education/training from a recognized educational institute in the subject of Occupational Health and Safety. In the occupational health and safety world:

- a. the Canadian Registered Safety Professional credential awarded after thorough examination by the Board of Canadian Registered Safety Professionals (<https://www.bcrsp.ca/>)
- b. the Registered Occupational Hygienist credential awarded after thorough examination by the Canadian Registration Board of Occupational Hygienists (<http://www.crboh.ca/>)

are considered the relevant professional designations. In the same way that the Professional Engineers credential is awarded by Professional Engineers Ontario as

opposed to an educational institute, the CRSP and ROH are awarded by their respective professional licensing bodies as opposed to an educational institute. In our specific case, our preferred resource has both a CRSP and ROH (as well as P.Eng), but does not have a university degree in occupational health and safety. Would proof of obtaining the Canadian Registered Safety Professional and the Registered Occupational Hygienist designations be considered equivalent?

A7. – Yes.

Q8. - 6.2 mentions appendices 1 to 13 which are not included in the RFP document. Can you indicate how those can be obtained?

A8. – See amendment, appendices attached.

Q9. – Is the intent to award the contract within several weeks of the close of bidding?

A9. – Yes. Within 2 weeks.

Q10. - With the extension of the submission deadline, will the start date be extended by a corresponding 2 weeks?

A10. – No.

Q11. – Can you specify which credits meet the requirements of the tender?

A10. – No.

EO 001.01

1. **Performance:** Select Appropriate Occupational Health Legislation/Orders/Guidelines.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) access to intranet (Defence Wide Area Network (DWAN));
 - (3) case study; and
 - (4) peer assistance; and
 - b. denied: supervision.
3. **Standard:** IAW specified references the PMed Tech QL6A student shall select appropriate occupational health legislation/orders/guidelines to support decisions/proposed solutions to problems.
4. **Teaching Points:**
 - a. discuss the six steps of project research to include (Ref: EO 001.01 Annex D):
 - (1) highlight the subjects;
 - (2) search for sources of information;
 - (3) selection of documents;
 - (4) preview the information;
 - (5) select appropriate information; and
 - (6) extract the information you want (required);
 - b. describe industrial hygiene and the law with specific attention to:
 - (1) the industrial hygienist (Ref: C229E pg 180);
 - (2) criteria of a professional (Ref: C229E pg 180);

- (3) ethical responsibilities (Ref: C229E pg 181);
 - (4) torts (Ref: C229E pg 181-182);
 - (5) negligence (Ref: C229E pg 182-184); and
 - (6) due diligence including (Ref: C449):
 - (a) definition;
 - (b) significance with industrial hygiene; and
 - (c) establishing a program;
- c. define the following:
 - (1) federal work, undertaking or business (Ref: C372E – Definitions para 3);
 - (2) dependant contractor (Ref: C372E – Definitions para 3);
 - (3) employee (Ref: C372E – Definitions para 3); and
 - (4) employer (Ref: C372E – Definitions para 3);
- d. describe the purpose of part to include preventive measures (Ref: C372E – article 122.2);
- e. describe the general duty of employer (Ref: C372E – article 124);
- f. describe provincial legislation (Ref: C450);
- g. describe the National Fire Protection Association (NFPA) code and standards (Ref: C451);
- h. describe the Canadian Standards Association (CSA) standards (Ref: C452);
- i. describe the health services facilities accreditation process with specific attention to (Ref: A291):
 - (1) Primary Care Renewal Initiatives (PCRI) and accreditation; and
 - (2) accreditation tips for the clinics; and
- j. describe the Professional Technical Network to include the integrating of the Professional Technical Network into the clinic model (Ref: A291).

5. **Time:**

- a. 2 x 50 min pds – IL;
- b. 4 x 50 min pds – CS; and
- c. 1 x 50 min pd – debrief.

Total EO time = 350 min.

6. **Method of Instruction:**

- a. IL interactive lecture; and
- b. CS case study (pub-ex).

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions; and
- b. CS the students respond to the description of a scenario related to the target performance, examining the facts and incidents of the case, to critically analyze them and develop solutions.

8. **References:**

- a. A291 Primary Care Renewal Initiative
http://hr.ottawa-hull.mil.ca/health/information/engraph/PCRI_home_e.asp?Lev1=2&Lev2=20&Lev3=1;
- b. C229E Patty's Industrial Hygiene & Toxicology: General Principles, 4th ed., Vol. 1, Part A. Editors: D. George & Florence E. Clayton. Publisher: John Wiley & Sons Inc. c1991;
- c. C372E Canada Labour Code, c1985
<http://laws.justice.gc.ca/en/L-2/index.html>;
- d. C449 CCOHS – OSH Answers – Due Diligence
<http://www.ccohs.ca/oshanswers/legisl/diligence.html?print>;

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- e. C450 Canadian Governments and Legislations – Library and Archives Canada
<http://www.collectionscanada.ca/information-management/index-e.html>;
- f. C451 NPFA (National Fire Protection Association) – How the Code Process Works – Standard
<http://www.nfpa.org/categoryList.asp?categoryID=162&URL=Codes%20and%20Standards/Code%20development%20process/How%20the%20code%20process%20works>; and
- g. C452 CSA (Canadian Standards Association) – Standards Development
www.csa.ca/standards/Default.asp?language=English.

9. **Training Aids:**

- a. nil.

10. **Learning Aids:**

- a. case study (pub-ex);
- b. NPFA/CSA/ Canadian Centre for Occupational Health and Safety (CCOHS) handout (Annexes A, B, and C to EO 001.01); and
- c. the Research Conduct Method Documentary (Annex D to EO 001.01).

11. **Test Details:** the PMed Tech QL6A student shall select appropriate occupational health legislation/orders/guidelines through case study (pub-ex) based where the student will be assessed as **satisfactory/unsatisfactory**. Due to the critical nature of the material learned in this EO, the student's knowledge will be verified and confirmed throughout the entire course in other homework and practical assignments.

12. **Remarks:**

- a. each student will receive their own case study (pub-ex) to conduct occupational health legislation/orders/guidelines exercise; and
- b. peer interaction is to be strongly encouraged during the completion of these tasks.

EO 002.01

1. **Performance:** Apply Principles and Theory of Evaluating Hazards in Relation to Occupational Health Equipment.
2. **Conditions:**
 - a. given: references; and
 - b. denied: assistance and/or supervision.
3. **Standard:** IAW specified references the PMed Tech QL6A student shall apply principles and theory of evaluating hazards in relation to occupational health equipment with specific attention to:
 - a. preparation of a sampling train;
 - b. calibration of occupational health equipment;
 - c. types of occupational health equipment; and
 - d. detection methods.
4. **Teaching Points:**
 - a. describe types of sampling to include (Ref: C197E, pg 485):
 - (1) personal vs area (Ref: C197E, pg 485-486); and
 - (2) grab vs integrated (Ref: C197E, pg 486);
 - b. describe a sampling train ((Ref: C197E, pg 486);
 - c. describe the use of collection devices for gases and vapours with specific attention to (Ref: C197E, pg 486):
 - (1) grab sampling (Ref: C197E, pg 486-487);
 - (2) integrated air sampling to include (Ref: C197E, pg 487):
 - (a) absorption (Ref: C197E, pg 487); and
 - (b) adsorption (Ref: C197E, pg 487-489); and
 - (3) passive monitors (Ref: C197E, pg 489);

- d. describe collection devices for particulates to include (Ref: C197E, pg 489):
 - (1) filters (Ref: C197E, pg 489-490);
 - (2) cyclones (Ref: C197E, pg 490-492);
 - (3) electrostatic precipitators (Ref: C197E, pg 492);
 - (4) inertial impactors (Ref: C197E, pg 492);
 - (5) impinger (Ref: C197E, pg 492); and
 - (6) elutriator (Ref: C197E, pg 492);
- e. describe suction pumps (Ref: C197E, pg 492-493);
- f. describe flow rate meters to include (Ref: C197E, pg 493):
 - (1) pressure compensating devices (Ref: C197E, pg 493); and
 - (2) critical-flow orifices (Ref: C197E, pg 493-494);
- g. describe sampling method (Ref: C197E, pg 494-496);
- h. describe calibration of sampling equipment to include (Ref: C229E, pg 433-434 section 4.1):
 - (1) primary calibration using:
 - (a) mariotti bottle (Ref: C197E, pg 496);
 - (b) spirometer (Ref: C197E, pg 496); and
 - (c) soap bubble meter (Ref: C197E, pg 496-98); and
 - (2) secondary calibration using:
 - (a) wet test meter (Ref: C197E, pg 498);
 - (b) dry gas meter (Ref: C197E, pg 498); and
 - (c) precision rotameter (Ref: C197E, pg 499);
- i. discuss sampling and analytical error (Ref: C197E, pg 504);

- j. describe record keeping (Ref: C197E, pg 504-506 and fig 16-27);
- k. describe the different reading instruments intended for one compound or group of compounds with specific attention to:
 - (1) combustible gas monitors to include (Ref: C197E, pg 510):
 - (a) explosive limits (Ref: C197E, pg 510);
 - (b) instrument design (Ref: C197E, pg 510-511);
 - (c) zero adjustment (Ref: C197E, pg 510-513);
 - (d) interpretation of meter readings (Ref: C197E, pg 513-514);
 - (e) high flash-point solvents (Ref: C197E, pg 514);
 - (f) catalyst poisoning (Ref: C197E, pg 514);
 - (g) interferences (Ref: C197E, pg 514); and
 - (h) other features (Ref: C197E, pg 514);
 - (2) oxygen monitors to include (Ref: C197E, pg 515):
 - (a) colourmetric detectors (Ref: C197E, pg 515); and
 - (b) polarographic detectors (Ref: C197E, pg 515);
 - (3) carbon monoxide monitors (Ref: C197E, pg 515);
 - (4) indoor air quality monitors (Ref: C197E, pg 515-516);
 - (5) other monitors using electromechanical or metal oxide semiconductor detectors (Ref: C197E, pg 516);
 - (6) mercury vapour monitors (Ref: C197E, pg 517);
 - (7) direct-reading colorimetric tubes and badges to include (Ref: C197E, pg 517):
 - (a) detector tubes (Ref: C197E, pg 517);
 - (b) principles of operation (Ref: C197E, pg 517);

- (c) active sampling (Ref: C197E, pg 517-518);
 - (d) flow rate (Ref: C197E, pg 518);
 - (e) passive monitors (Ref: C197E, pg 518-519);
 - (f) interpreting the results (Ref: C197E, pg 519);
 - (g) specificity (Ref: C197E, pg 519);
 - (h) shelf life (Ref: C197E, pg 519); and
 - (i) certification of chemical detector tube (Ref: C197E, pg 519-520);
and
- (8) other colorimetric direct reading devices to include (Ref: C197E, pg 520):
 - (a) colorimetric tape samplers (Ref: C197E, pg 520); and
 - (b) colorimetric analyzer (Ref: C197E, pg 520);
- 1. discuss monitors intended for a broad range of compounds to include:
 - (1) non-specific detectors to include (Ref: C197E, pg 520):
 - (a) flame ionization detectors (FID) (Ref: C197E, pg 520-521);
 - (b) photo ionization detector (PID) (Ref: C197E, pg 521-522);
 - (c) electron capture detectors (Ref: C197E, pg 522); and
 - (d) thermal conductivity detectors (Ref: C197E, pg 522);
 - (2) spectrophotometers and spectrometers to include (Ref: C197E, pg 522):
 - (a) infrared analyzers (IR) (Ref: C197E, pg 522-523);
 - (b) photo acoustic spectrometers (Ref: C197E, pg 523); and
 - (c) ultraviolet analyser (Ref: C197E, pg 523);
 - (3) gas chromatographs (Ref: C197E, pg 523-24);
 - (4) ion mobility spectrometer (Ref: C197E, pg 524); and

- (5) particulates monitor (Ref: C197E, pg 525-526); and
 - m. discuss calibration (Ref: C197E, pg 526).
5. **Time:**
- a. 8 x 50 min pds – IL/D; and
 - b. 2 x 50 min pds – EC.
- Total EO time = 400 min; and
- Total EC time = 100 min.
6. **Method of Instruction:**
- a. IL interactive lecture; and
 - b. D demonstration.
7. **Substantiation:**
- a. IL the interactive lecture method is used to present the students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions; and
 - b. D the demonstration method is used to provide the student with a correct and detailed example of the procedure.
8. **References:**
- a. C197E Fundamentals of Industrial Hygiene: occupation safety and health series, 4th Edition National Safety Council, Itasca, Ill. c1996; and
 - b. C229E Patty's Industrial Hygiene and Toxicology: general principles, 4th Edition, Volume 1, Part A, Publisher: John Wiley & Sons Inc. C1991.
9. **Training Aids:**
- a. sampling trains; and
 - b. over head (OH) equipment.
10. **Learning Aids:**

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a. nil.

11. **Test Details:** the PMed Tech QL6A student shall apply principles and theory of evaluating hazards in relation to occupational health equipment through a written EC where the student must achieve a minimum of 70% for a satisfactory result. Due to the critical nature of the material learned in this EO, the PMed Tech QL6A student's knowledge will be verified and confirmed throughout the entire course in other homework and practical assignments.

12. **Remarks:** nil.

EO 002.02

1. **Performance:** Utilize Occupational Health Equipment.
2. **Conditions:**
 - a. given:
 - (1) references; and
 - (2) equipment;
 - b. denied: nil.
3. **Standard:** IAW the specified references the PMed Tech QL6A student shall operate occupational health equipment by:
 - a. describing with precision the occupational health equipment and accessories;
 - b. performing first line maintenance on occupational health equipment; and
 - c. performing calibration on occupational health equipment.
4. **Teaching Points:**
 - a. operate the Air Velocity Meter through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
 - (1) unpacking and parts identification (Ref: A6(1), pg 1-2);
 - (2) setting-up (Ref: A6(1), pg 3-5);
 - (3) operation (Ref: A6(1), pg 7-16);
 - (4) maintenance (Ref: A6(1), pg 17);
 - (5) troubleshooting (Ref: A6(1), pg 19);
 - (6) specifications (Ref: A6(1), pg 21); and
 - (7) dip switch settings (Ref: A6(1), pg 25);
 - b. operate the Indoor Air Quality (IAQ) Monitor through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:

- (1) unpacking and parts identification (Ref: A6(2), pg 1-2);
 - (2) setting-up (Ref: A6(2), pg 3-6);
 - (3) operation (Ref: A6(2), pg 7-20);
 - (4) calibration and maintenance (Ref: A6(2), pg 21-27);
 - (5) troubleshooting (Ref: A6(2), pg 29);
 - (6) specifications (Ref: A6(2), pg 31); and
 - (7) internal dip switch settings (Ref: A6(2), pg 35);
- c. operate the Dust and Particulate Monitor through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
- (1) unpacking and parts identification (Ref: A6(3), pg 1-2);
 - (2) setting-up (Ref: A6(3), pg 5-8);
 - (3) operation (Ref: A6(3), pg 9-28);
 - (4) maintenance (Ref: A6(3), pg 29-36);
 - (5) troubleshooting (Ref: A6(3), pg 37);
 - (6) specifications (Ref: A6(3), pg 39);
 - (7) DustTrak model 8520-1 environmental enclosure operation and maintenance manual (Ref: A6(3), pg 41-42);
 - (8) setting-up (Ref: A6(3), pg 44-52);
 - (9) maintenance (Ref: A6(3), pg 57-58);
 - (10) troubleshooting the environmental enclosure (Ref: A6(3), pg 59); and
 - (11) specifications: environmental enclosure (Ref: A6(3), pg 61);
- d. operate the Multi Gas Monitor through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:

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- (1) operation of MultiRAE PLUS (Ref: A6(4), pg 2-1 – 2-24);
 - (2) operation of accessories (Ref: A6(4), pg 3-1 – 3-8);
 - (3) programming of MultiRAE PLUS to include:
 - (a) programming mode (Ref: A6(4), pg 4-2 – 4-3);
 - (b) keys for programming mode (Ref: A6(4), pg 4-4);
 - (c) entering into programming menu (Ref: A6(4), pg 4-5 – 4-6);
 - (d) calibration of MultiRae Plus Monitor (Ref: A6(4), pg 4-7 – 4-18);
 - (e) change alarm limits (Ref: A6(4), pg 4-19 – 4-20);
 - (f) view or change datalog (Ref: A6(4), pg 4-21 – 4-27);
 - (g) change monitor setup (Ref: A6(4), pg 4-28 – 4-36); and
 - (h) change sensor configuration (Ref: A6(4), pg 4-37 – 4-45);
 - (4) computer interface for MultiRAE Plus (Ref: A6(4), pg 5-1 – 5-39);
 - (5) theory of operation (Ref: A6(4), pg 6-1);
 - (6) maintenance (Ref: A6(4), pg 7-1 – 7-11); and
 - (7) troubleshooting (Ref: A6(4), pg 8-1 – 8-11);
- e. operate the Air Sampling Pumps through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
- (1) general description (Ref: A6(5), pg 5-10);
 - (2) operation to include (Ref: A6(5), pg 11-18):
 - (a) high flow operation;
 - (b) sampling with clock version;
 - (c) sampling with programmable version;
 - (d) low flow operation;

- (e) bag sampling, constant flow; and
 - (f) bag sampling – multi-flow;
- (3) maintenance (Ref: A6(5), pg 19-29); and
- (4) pump specifications (Ref: A6(5), pg 30-31);
- f. operate the Air Sampling Pump Calibrator through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
 - (1) general description (Ref: A6(6), pg 2-6);
 - (2) theory of operation (Ref: A6(6), pg 7);
 - (3) operating procedures – initial set-up and operation (Ref: A6(6), pg 8-12);
 - (4) storage and maintenance (Ref: A6(6), pg 13-17);
 - (5) the printer module to include (Ref: A6(6), pg 18):
 - (a) introduction and general description (Ref: A6(6), pg 18-19);
 - (b) theory of operation (Ref: A6(6), pg 19);
 - (c) operation procedures (Ref: A6(6), pg 19-21); and
 - (d) storage and maintenance (Ref: A6(6), pg 21);
 - (6) specifications (Ref: A6(6), pg 22-23); and
 - (7) calibrator parts list (Ref: A6(6), pg 23);

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- g. operate the Air Sampling Pump Battery Maintenance System (BMS) through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
 - (1) introduction to include:
 - (a) overview (Ref: A6(7), pg 8);
 - (b) features (Ref: A6(7), pg 8); and
 - (c) plugs and adapters (Ref: A6(7), pg 10);
 - (2) operation modes to include:
 - (a) automatic charge mode (Ref: A6(7), pg 12); and
 - (b) capacity evaluate mode (Ref: A6(7), pg 12);
 - (3) operation to include:
 - (a) setting up (Ref: A6(7), pg 16); and
 - (b) program selection (Ref: A6(7), pg 16);
 - (4) parts list (Ref: A6(7), pg 17);
 - (5) specifications (Ref: A6(7), pg 18);
 - (6) returned material authorization (Ref: A6(7), pg 20);
 - (7) care sheet for maximizing Nickel-Cadmium (Ni-Cad) and Nickel Metal Hydride(NiMhH) battery performance (Ref: A6(8)); and
 - (8) NiCd, NiMH & Lithium Ion (Li-ion) Comparison chart (Ref: A6(8));
- h. operate the Personal Aerosol Monitor through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
 - (1) unpacking and parts identification (Ref: A6(9), pg 1-2);
 - (2) setting-up (Ref: A6(9), pg 7-16);

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- (3) operation to include (Ref: A6(9), pg 17):
 - (a) keypad functions (Ref: A6(9), pg 17);
 - (b) identifying SidePak AM510 features (Ref: A6(9), pg 18);
 - (c) power up (Ref: A6(9), pg 18);
 - (d) power down (Ref: A6(9), pg 19);
 - (e) survey mode (Ref: A6(9), pg 19); and
 - (f) main menu to include (Ref: A6(9), pg 19):
 - i. data log (Ref: A6(9), pg 20);
 - ii. setup menu (Ref: A6(9), pg 27);
 - iii. statistics (Ref: A6(9), pg 34); and
 - iv. zero cal (Ref: A6(9), pg 35);
- (4) maintenance (Ref: A6(9), pg 37-44);
- (5) troubleshooting (Ref: A6(9), pg 45-48);
- (6) specifications (Ref: A6(9), pg 49-52);
- (7) custom calibrations (Ref: A6(10), pg 53-54);
- (8) converting stored data to calibrated data (Ref: A6(9), pg 55); and
- (9) quick reference (Ref: A6(9), pg 57);
- i. operate the Microbial Air Sampler through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
 - (1) individual parts and functions (Ref: A6(10), pg 3, 27);
 - (2) application (Ref: A6(10), pg 15);

- (3) principles of operation and construction (Ref: A6(10), pg 16);
- (4) operation to include (Ref: A6(10), pg 17-19):
 - (a) general notes on operation;
 - (b) sterilization and decontamination before use;
 - (c) insertion of the Agar Strip;
 - (d) switching the instrument on;
 - (e) setting the sample volume;
 - (f) starting the instrument;
 - (g) switching the instrument off; and
 - (h) removal of the Agar Strip;
- (5) evaluation of the results (Ref: A6(10), pg 19);
- (6) display messages/acoustic signals (Ref: A6(10), pg 20);
- (7) service and maintenance to include (Ref: A6(10), pg 20-21):
 - (a) general RESET; and
 - (b) calibration;
- (8) accessories (Ref: A6(10), pg 22);
- (9) technical data (Ref: A6(10), pg 23); and
- (10) special notes for the explosion Proof version RCS Plus EX (Ref: A6(10), pg 24);

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- j. operate the ambient particle sizing sampler through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
 - (1) one stage viable particle sampler to include:
 - (a) fungi (Ref: A6(11), pg 2);
 - (b) bacteria (Ref: A6(11), pg 3); and
 - (c) thermophilic actinomycetes (Ref: A6(11), pg 3);
 - (2) aerodynamic particle sizing (Ref: A6(11), pg 4);
 - (3) compactors to include:
 - (a) description (Ref: A6(11), pg 5);
 - (b) assembly (Ref: A6(11), pg 5-6);
 - (c) sampling (Ref: A6(11), pg 6); and
 - (d) calibration (Ref: A6(11), pg 6-7);
 - (4) analysis and interpretation (Ref: A6(11), pg 7-8); and
 - (5) instruction for vacuum pump (Ref: A6(11), pg 8-10, 12); and
- l. operate the Air Capture Hood through the demonstration of main functions, and performance of first line maintenance and calibration with specific attention to:
 - (1) set up (Ref: A6(13), pg 1-12);
 - (2) operations in more detail (Ref: A6(13), pg 13-34);
 - (3) maintenance (Ref: A6(13), pg 35-36);
 - (4) troubleshooting (Ref: A6(13), pg 37);
 - (5) back pressure (Ref: A6(13), pg 41); and
 - (6) specifications (Ref: A6(13), pg 43).

5. **Time:**

- a. 32 x 50 min pds – operate equipment through IL, DP and P; and
- b. 11 x 50 min pds – enabling check
- c. Total EO time = 2150 min.

6. **Substantiation:**

- a. IL the interactive lecture method is used to present candidates with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions;
- b. DP the demonstration performance method is used to provide the candidate with a correct and detailed example of the procedure and then afford them the opportunity for maximum supervised practice;
- c. P the practice method is used in order to allow the consolidation of skills learned in separate lessons within this EO and increase speed and accuracy in application of the process.

7. **Training Aids:**

- a. equipment;
- b. equipment manuals;
- c. air sampling accessories (tube holders, cassette holders, tubing of various sizes, adapters, jeweler's Phillips screwdriver, jeweler's slotted screwdriver); and
- d. calibration gases.

8. **Learning Aids:**

- a. equipment;
- b. equipment manuals;
- c. air sampling accessories (tube holders, cassette holders, tubing of various sizes, adapters, jeweler's Phillips screwdriver, jeweler's slotted screwdriver); and
- d. calibration gases.

Drafted May 2016

9. **Test Details:**

- a. Formative: this EO will require candidate's to operate equipment IAW the checklist based on random selection; and
- b. Summative: there will be no formal PC for PO 002; operation of equipment will be tested in PC 004.

10. **Remarks:**

- a. recommended instructor: industrial hygienist; and
- b. instructor to provide an example of a handout to ensure continuity (Annex B to EO 002.02)

EO 003.01

1. **Performance:** Apply the Principles and Theories of Industrial Hygiene.
2. **Conditions:**
 - a. given: references; and
 - b. denied: assistance and/or supervision.
3. **Standard:** IAW specified references the PMed Tech QL6A student will apply the principles and theories of industrial hygiene by:
 - a. applying a methodology that employs critical thought processes from theory to practical application; and
 - b. demonstrating scientific and mathematical problem solving techniques for industrial health work place situations.
4. **Teaching Points:**
 - a. explain the basic concepts of occupational health with specific attention to:
 - (1) the definition of industrial hygiene (Ref: C197E, pg 3 para 1);
 - (2) the definition industrial hygienist (Ref: C197E, pg 3 para 2);
 - (3) professional ethics (Ref: C197E, pg 4); and
 - (4) the components of the occupational health and safety team (Ref: C197E, pg 4-5);
 - b. explain the definitions of environmental factors or stresses to include:
 - (1) chemical hazards (Ref: C197E, pg 7);
 - (2) physical hazards (Ref: C197E, pg 7);
 - (3) biological hazards (Ref: C197E, pg 7); and
 - (4) ergonomic stresses (Ref: C197E, pg 7);
 - c. explain the general principles of evaluation with specific attention to:
 - (1) the basic approach to hazard recognition (Ref: C197E, pg 454);

- (2) review of literature (Ref: C197E, pg 454);
- (3) inventory (Ref: C197E, pg 455);
- (4) the process or operation (Ref: C197E, pg 455-456);
- (5) the process flow sheet (Ref: C197E, pg 456);
- (6) checklists (Ref: C197E, pg 458-459);
- (7) cleaning methods (Ref: C197E, pg 459);
- (8) the process of safety management (Ref: C197E, pg 459); and
- (9) field survey to include (Ref: C197E, pg 460-461):
 - (a) sensory perception;
 - (b) control measures in use; and
 - (c) observation and interview;
- d. explain the basics principles, concepts and theories of chemistry with specific attention to:
 - (1) composition of matter (Ref: C180E, pg 34-40);
 - (2) structure of matter to include (Ref: C180E, pg 42-57):
 - (a) atoms;
 - (b) Dalton's Atomic Theory;
 - (c) inside the atom;
 - (d) atomic number;
 - (e) atomic mass;
 - (f) mass number;
 - (g) number of neutrons;
 - (h) isotopes;

- (i) structure of the Atom;
 - (j) arrangement of electrons;
 - (k) energy sublevels;
 - (l) periodic table; and
 - (m) metals, non-metals, metalloids; and
- (3) chemical bondings to include:
 - (a) molecules (Ref: C180E, pg 62);
 - (b) symbols and formulas (Ref: C180E, pg 62-63);
 - (c) formation of ions (Ref: C180E, pg 63-65);
 - (d) ionic bonds (Ref: C180E, pg 66);
 - (e) covalent bonds (Ref: C180E, pg 71-72); and
 - (f) molecular mass (Ref: C180E, pg 80-83);
- e. explain the state of matter (Ref: C180E, pg 28);
- f. explain gas laws with specific attention to:
 - (1) ideal gas law (Ref: C174E, pg 42 section 6);
 - (2) gas volume correction to include:
 - (a) Charles' law (Ref: C174E, pg 39 section 5); and
 - (b) Boyles' law (Ref: C174E, pg 38);
 - (3) Dalton's law (Ref: C174E, pg 45 section 8); and
 - (4) gram molecular volume (Ref: C174E, pg 43 section 7);
- g. explain concentration calculation to include (Ref: C174E, pg 86-87):
 - (1) conversion calculation (Ref: C174E, pg 82 section 6 para 1);

- h. explain organic chemistry with specific attention to:
 - (1) importance of organic chemistry (Ref: C180E, pg 239);
 - (2) structural formulas (Ref: C180E, pg 240-243);
 - (3) isomers (Ref: C180E, pg 243); and
 - (4) bonding ability of carbon (Ref: C180E, pg 243-244);
- i. explain hydrocarbons through definitions with specific attention to:
 - (1) alkanes (Ref: C180E, pg 248-257);
 - (2) alkyl groups (Ref: C180E, pg 252-257);
 - (3) cycloalkanes (Ref: C180E, pg 257-258);
 - (4) sources of hydrocarbons (Ref: C180E, pg 258-259); and
 - (5) properties of hydrocarbons (Ref: C180E, pg 259-262);
- j. explain alcohols and ethers with specific attention to (Ref: C180E, pg 282-294):
 - (1) alcohols;
 - (2) writing structures;
 - (3) methyl;
 - (4) ethyl;
 - (5) ethylene glycol;
 - (6) glycerol;
 - (7) other;
 - (8) types;
 - (9) reactions;
 - (10) thiols;
 - (11) phenols;

- (12) phenol derivatives; and
- (13) ethers; and
- k. explain all other organic compounds with specific attention to:
 - (1) aldehydes (Ref: C180E , pg 297-302);
 - (2) ketones (Ref: C180E , pg 302-305);
 - (3) organic acids (Ref: C180E , pg 305-310);
 - (4) esters (Ref: C180E , pg 313-317);
 - (5) aliphatic amines (Ref: C180E , pg 317-321);
 - (6) amino acids (Ref: C180E , pg 321-323);
 - (7) amides (Ref: C180E, pg 323-325); and
 - (8) aromatic compounds to include (Ref: C180E, pg 273-279):
 - (a) benzenes;
 - (b) toluene;
 - (c) xylene;
 - (d) naphthalene; and
 - (e) anthracene and phenanthrene.

5. **Time:**

- a. 28 x 50 min pds – IL; and
- b. 2 x 50 min pds – EC.

Total EO time = 1400 min; and

Total EO time = 100 min.

6. **Method of Instruction:**

Drafted May 2017

- a. IL interactive lecture.

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions.

8. **References:**

- a. C174E Calculation methods for industrial hygiene, Salvatore R. Dinardi; Van Nostrand Reinhold Publishing. c1995;
- b. C180E Chemistry for the Health Sciences, 8th edition, George I. Sackheim & Dennis D. Lehman: Toronto, Prentice Hall. c1998; and
- c. C197E Fundamental of Industrial Hygiene: occupation safety and health series. 4th ed. National Safety Council, Itasca, Ill. c1996.

9. **Training Aids:**

- a. nil.

10. **Learning Aids:**

- a. student handout with practice problems.

11. **Test Details:** the PMed Tech QL6A student shall apply the principles and theories of industrial hygiene through a minimum of two homework assignments. Due to the critical nature of the material learned in this EO, the PMed Tech QL6A student's knowledge will be verified and confirmed throughout the entire course in other homework and practical assignments.

12. **Remarks:** due to the critical nature of this knowledge, practical application will be verified in both PC 003 and PC 004.

EO 003.02

1. **Performance:** Describe Health Hazards on the Human Body.
2. **Conditions:**
 - a. given: references; and
 - b. denied: assistance and/or supervision.
3. **Standard:** IAW specified references the PMed Tech QL6A student will describe health hazards on the human body to include:
 - a. human anatomy and physiology;
 - b. the effects of microorganisms;
 - c. the effects of toxic substances; and
 - d. the effects of radiation.
4. **Teaching Points:**
 - a. describe the respiratory system with specific attention to:
 - (1) gas exchange (Ref: C197E, pg 42 paras 1-4);
 - (2) oxygen tension (Ref: C197E, pg 42-43 paras 1-3);
 - (3) pressure changes (Ref: C197E, pg 43-44 paras 1, 2 and 4);
 - (4) hazards (Ref: C197E, pg 47-48 para 1, para 2 bullet 6 and para 12); and
 - (5) natural defences (Ref: C197E, pg 48-79 paras 1 and 2);
 - b. describe the skin with specific attention to (Ref: C197E, pg 53 para 1):
 - (1) anatomy and physiology to include:
 - (a) blood vessels (Ref: C197E, pg 56);
 - (b) hair (Ref: C197E, pg 56);
 - (c) ultra violet light (Ref: C197E, pg 57); and

- (d) skin absorption (Ref: C197E, pg 57 para 2);
 - (2) defence mechanism (Ref: C197E, pg 58); and
 - (3) direct causes of occupational skin disease to include (Ref: C197E, pg 59 para 1):
 - (a) chemical (Ref: C197E, pg 59 para 1);
 - (b) mechanical (Ref: C197E, pg 63);
 - (c) physical (Ref: C197E, pg 63);
 - (d) biological (Ref: C197E, pg 64); and
 - (e) botanical (Ref: C197E, pg 64);
- c. describe the eyes with specific attention to (Ref: C197E, pg 103 para 1 and 1):
 - (1) physical hazards (Ref: C197E, pg 110);
 - (2) irradiation burns to include:
 - (a) damage mechanisms (Ref: C197E, pg 112);
 - (b) ultraviolet radiation (Ref: C197E, pg 112); and
 - (c) infrared radiation (Ref: C197E, pg 112); and
 - (3) chemical hazards (Ref: C197E, pg 112);
- d. describe industrial toxicology (Ref: C197E, pg 123 para 1) with specific attention to:
 - (1) definition (Ref: C197E, pg 123-124);
 - (2) toxicity versus hazards (Ref: C197E, pg 124);
 - (3) entry into the body (Ref: C197E, pg 125) to include:
 - (a) inhalation (Ref: C197E, pg 125);
 - (b) skin absorption (Ref: C197E, pg 125);

- (c) ingestion (Ref: C197E, pg 125-126); and
- (d) injection (Ref: C197E, pg 126 paras 1 and 2);
- (4) dose-response relationship (Ref: C197E, pg 126 para 1);
- (5) threshold concept (Ref: C197E, pg 126-127);
- (6) lethal dose (Ref: C197E, pg 127);
- (7) lethal concentration (Ref: C197E, pg 127-128);
- (8) responses (Ref: C197E, pg 128);
- (9) action of toxic substances to include (Ref: C197E, pg 128):
 - (a) acute effects (Ref: C197E, pg 129);
 - (b) chronic effects (Ref: C197E, pg 129); and
 - (c) exposures (Ref: C197E, pg 129);
- (10) effects of exposure to air contaminants to include (Ref: C197E, pg 129):
 - (a) irritation (Ref: C197E, pg 129-130); and
 - (b) asphyxiants to include (Ref: C197E, pg 131):
 - i. chemical asphyxiants (Ref: C197E, pg 131);
- (11) central nervous system depressants (Ref: C197E, pg 132);
- (12) other effects to include (Ref: C197E, pg 132):
 - (a) cardiac sensitization (Ref: C197E, pg 132); and
 - (b) neurotoxic effects (Ref: C197E, pg 132-134);
- (13) neoplasms and reproductive toxicity to include (Ref: C197E, pg 134):
 - (a) carcinogenesis (Ref: C197E, pg 134-135);

- (b) mutagensis (Ref: C197E, pg 135-136); and
 - (c) reproductive toxicity (Ref: C197E, pg 136);
- (14) American Conference of Industrial Hygienists (ACGIH) threshold limit values to include (Ref: C197E, pg 140):
 - (a) guides (Ref: C197E, pg 140-141);
 - (b) TWA (Ref: C197E, pg 141);
 - (c) ceiling values (Ref: C197E, pg 141);
 - (d) mixtures (Ref: C197E, pg 142);
 - (e) carcinogens (Ref: C197E, pg 142);
 - (f) physical factors (Ref: C197E, pg 142);
 - (g) unlisted substances (Ref: C197E, pg 142-143);
 - (h) basic data used for threshold Limit Values (TLV) (Ref: C197E, pg 143); and
 - (i) documentation (Ref: C197E, pg 143); and
- (15) biological standards to include (Ref: C197E, pg 143-145):
 - (a) urine tests (Ref: C197E, pg 145);
 - (b) blood analysis (Ref: C197E, pg 145);
 - (c) breath analysis (Ref: C197E, pg 145-146); and
 - (d) biological limits (Ref: C197E, pg 146);
- e. describe gases, vapours and solvents with specific attention to (Ref: C197E, pg 153):
 - (1) critical exposure factors to include:
 - (a) mode of use and potential for exposure (Ref: C197E, pg 154);
 - (b) temperature and volatility (Ref: C197E, pg 154);

- (c) concentration (Ref: C197E, pg 154);
 - (d) reality (Ref: C197E, pg 154); and
 - (e) exposure guidelines (Ref: C197E, pg 154);
- (2) solvents to include (Ref: C197E, pg 155):
 - (a) aqueous systems (Ref: C197E, pg 155); and
 - (b) organic systems (Ref: C197E, pg 155);
- (3) gases to include (Ref: C197E, pg 159):
 - (a) cryogenics (Ref: C197E, pg 159);
 - (b) simple asphyxiants (Ref: C197E, pg 159-160); and
 - (c) chemical asphyxiants (Ref: C197E, pg 160);
- (4) flammable and combustible liquids to include (Ref: C197E, pg 160):
 - (a) flammable liquids (Ref: C197E, pg 160);
 - (b) combustible (Ref: C197E, pg 160);
 - (c) flashpoint (Ref: C197E, pg 160-161); and
 - (d) flammable range (Ref: C197E, pg 161);
- (5) effects to include:
 - (a) physiological effects to include (Ref: C197E, pg 161):
 - (i) aqueous systems (Ref: C197E, pg 161);
 - (ii) organic compounds (Ref: C197E, pg 161);
 - (iii) aliphatic hydrocarbons (Ref: C197E, pg 162);
 - (iv) cyclic hydrocarbons (Ref: C197E, pg 162);
 - (v) aromatic hydrocarbons (Ref: C197E, pg 162);
 - (vi) halogenated hydrocarbons (Ref: C197E, pg 162-163);

- (vii) nitrohydrocarbons (Ref: C197E, pg 163);
 - (viii) oxygen-containing functional groups (Ref: C197E, pg 163-165);
 - (ix) inorganic acids (Ref: C197E, pg 165); and
 - (x) organic and inorganic gases (Ref: C197E, pg 165); and
 - (b) hazard potential to include (Ref: C197E, pg 165):
 - (i) other factors (Ref: C197E, pg 165-166);
 - (6) evaluation of hazards (Ref: C197E, pg 167); and
 - (7) control of hazards to include;
 - (a) responsibility of health and safety personnel (Ref: C197E, pg 168);
 - (b) process controls (Ref: C197E, pg 168-169);
 - (c) engineering controls (Ref: C197E, pg 169-170); and
 - (d) Personal Protective Equipment (PPE) (Ref: C197E, pg 170-172);
- f. describe particulates with specific attention to (Ref: C197E, pg 175-177):
 - (1) definitions to include:
 - (a) dust (Ref: B18E, pg 244);
 - (b) fumes (Ref: B18E, pg 244);
 - (c) mists (Ref: B18E, pg 244, 246);
 - (d) fog (Ref: B18E, pg 246);
 - (e) smoke (Ref: B18E, pg 246);
 - (f) fibre (Ref: B18E, pg 246);
 - (g) gases (Ref: C197E, pg 952);

- (h) vapours (Ref: C197E, pg 982);
- (i) brownian motion (Ref: C197E, pg 937);
- (j) impingement (Ref: C197E, pg 956);
- (k) flocculation (Ref: C197E, pg 950);
- (l) inertial movement (Ref: C197E, pg 956);
- (m) entrainment velocity (Ref: C197E, pg 947);
- (n) convection (Ref: C197E, pg 942);
- (o) centrifugal motion (Ref: B257);
- (p) electrical movement (Ref: B257);
- (q) thermal movement (Ref: B257);
- (r) air movement (Ref: B257);
- (s) mechanical causes (Ref: B257);
- (t) induction (Ref: B257); and
- (u) temperature (Ref: B257);
- (2) critical exposure factors to include (Ref: C197E, pg 177):
 - (a) type of particulate involved (Ref: C197E, pg 177);
 - (b) length of exposure (Ref: C197E, pg 177);
 - (c) particulate concentration (Ref: C197E, pg 177-178); and
 - (d) particulate size (Ref: C197E, pg 178-179);
- (3) biological reaction (Ref: C197E, pg 179-180);

- (4) selected particulates to include:
 - (a) silica (Ref: C197E, pg 180 paras 1-3);
 - (b) asbestos (Ref: C197E, pg 182 paras 1-3);
 - (c) lead (Ref: C197E, pg 186 paras 1-2);
 - (d) beryllium (Ref: C197E, pg 187 paras 1-4);
 - (e) miscellaneous dusts (Ref: C197E, pg 188 paras 1-4);
 - (f) toxic dusts and fumes (Ref: C197E, pg 188);
 - (g) welding fumes (Ref: C197E, pg 188-189);
 - (h) radioactive dusts (Ref: C197E, pg 189);
 - (i) bacteria and fungi (Ref: C197E, pg 189-190); and
 - (j) allergens (Ref: C197E, pg 190); and
- (5) control of particulates to include (Ref: C197E, pg 192):
 - (a) engineering controls (Ref: C197E, pg 192-194);
 - (b) administrative controls (Ref: C197E, pg 194); and
 - (c) PPE (Ref: C197E, pg 194-195);
- g. describe ionizing radiation with specific attention to:
 - (1) basic principles (Ref: C197E, pg 247-248);
 - (2) types of ionizing radiation to include (Ref: C197E, pg 251-525):
 - (a) alpha-particles (Ref: C197E, pg 252);
 - (b) beta-particles (Ref: C197E, pg 252-253);
 - (c) neutrons (Ref: C197E, pg 253);

- (d) x-radiation (Ref: C197E, pg 253-254); and
 - (e) gamma-radiation (Ref: C197E, pg 254); and
 - (3) biological effects of radiation to include (Ref: C197E, pg 255-256):
 - (a) types of injuries (Ref: C197E, pg 256-257);
- h. describe ergonomics with specific attention to (Ref: B20E Vol 2, pg 34-22 paras 1-3):
 - (1) ambient lighting (Ref: B20E Vol 2, pg 52.9 – 52.10);
 - (2) medical surveillance (Ref: B20E Vol 2, pg 52.12 – 52.13);
 - (3) musculoskeletal disorders (Ref: B20E Vol 2, pg 52.21 paras 1-3); and
 - (4) Video Display Terminals (VDT) (Ref: C197E);
- i. describe biological hazards with specific attention to:
 - (1) basic principles (Ref: C197E, pg 403-404);
 - (2) biological safety (Ref: C197E, pg 404);
 - (3) hazard identification to include (Ref: C197E, pg 404):
 - (a) micro-organisms (Ref: C197E, pg 404-405); and
 - (b) infection (Ref: C197E, pg 405-406); and
 - (4) risk assessment to include (Ref: C197E, pg 410):
 - (a) modes of transmission (Ref: C197E, pg 410-411);
 - (b) routes of entry (Ref: C197E, pg 411);
 - (c) infectious dose (Ref: C197E, pg 411); and
 - (d) viability and virulence of the agent (Ref: C197E, pg 411-412); and

- j. describe mould with specific attention to:
 - (1) types and causes of mould to include:
 - (a) what are moulds (Ref: B38E, pg 2);
 - (b) causes of mould growth (Ref: B38E, pg 4);
 - (c) types of mould (Ref: B38E, pg 5);
 - (d) how moulds grow (Ref: B38E, pg 10); and
 - (e) where moulds grow (Ref: B38E, pg 11);
 - (2) health effects of mould exposure to include:
 - (a) difficulties linking health effects to mould exposure (Ref: B38E, pg 14); and
 - (b) common health effects of mould exposure (Ref: B38E, pg 15);
 - (3) mould problems in the workplace to include:
 - (a) why be concerned about mould (Ref: B38E, pg 20);
 - (b) who should be concerned about mould (Ref: B38E, pg 21);
 - (c) knowing if your workplace has a mould problem (Ref: B38E, pg 21);
 - (d) air sampling and laboratory analysis (Ref: B38E, pg 27); and
 - (e) employee health survey (Ref: B38E, pg 29);
 - (4) dealing with mould to include:
 - (a) if you suspect mould (Ref: B38E, pg 34);
 - (b) when mould is found (Ref: B38E, pg 35); and
 - (c) controlling and mitigating mould growth (Ref: B38E, pg 37);

- (5) interpretation of mould measurement data to include:
 - (a) comparing mould measurement data with standards (Ref: B38E, pg 40); and
- (6) mould clean up and prevention to include:
 - (a) why clean up mould (Ref: B38E, pg 44);
 - (b) general guidelines for mould clean up (Ref: B38E, pg 45);
 - (c) mould clean up methods (Ref: B38E, pg 47); and
 - (d) knowing when the mould remediation or clean up is finished (Ref: B38E, pg 55).

5. **Time:**

- a. 107 x 50 min pds – IL/CS); and
- b. 6 x 50 min pds – assignment debrief.

Total EO time = 5650 min.

6. **Method of Instruction:**

- a. IL interactive lecture); and
- b. CS case study.

7. **Substantiation:**

- a. IL the interactive lecture method is used to present the students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions); and
- b. CS the students respond to the description of a scenario related to the target performance, examining the facts and incidents of the case, to critically analyze them and develop solutions.

Drafted May 2016

8. **References:**

- a. B18E The Occupational Environment: Its Evaluation & Control. Washington, D.C: National Institute for Occupational Safety and Health, c1973
<http://www.cdc.gov/niosh/nmam/chaps.html>);
- b. B20E Encyclopaedia of Occupational Health and Safety. Vol 1-4 - 4th ed., c1998);
- c. B38E Mould in the Workplace – A Basic Guide, Canadian Centre for Occupation Health and Safety);
- d. B257 PMed 6A Reference Handouts Binder -Medical Directive 2/84); and
- e. C197E Fundamental of Industrial Hygiene: Occupation Safety and Health Series. 4th ed. National Safety Council, Itasca, Ill. c1996PMed 6A Reference Handouts Binder -Medical Directive 2/84.

9. **Training Aids:**

- a. handout: Theory, Principles and Practices of IH by JP Farant.

10. **Learning Aids:**

- a. student handout); and
- b. study case.

11. **Test Details:**

- a. this EO will be divided in six easily managed sections of which each will be evaluated by the instructor through individual assignments (Exercises 1 to 6). The assignment will be assessed as **satisfactory/unsatisfactory**. The PMed Tech QL6A student must achieve a minimum of 70% to meet the standard. Due to the critical nature of the material learned in this EO, the PMed Tech QL6A student's knowledge will be verified and confirmed throughout the entire course in other homework and practical assignments); and
- b. due to the critical nature of this knowledge, practical application will be verified in both PC 003 and PC 004.

12. **Remarks:**

- a. student handbook may include student-required readings, math calculations and problems, case studies, scenarios, equipment tool outline and other student tools); and
- b. the assignment will be given after each block of instruction. The blocks will be separated as:
 - (1) Block 1 – teaching points 1 to 3);
 - (2) Block 2 – teaching point 4);
 - (3) Block 3 – teaching point 5);
 - (4) Block 4 – teaching point 6);
 - (5) Block 5 – teaching points 7 to 9); and
 - (6) Block 6 – teaching point 10.

EO 003.03

1. **Performance:** Describe Common Industrial Processes.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) access to a workshop; and
 - (3) case study; and
 - b. denied: assistance and/or supervision.
3. **Standard:** IAW with specified references the PMed Tech QL6A student will describe common industrial processes by:
 - a. discussing the principles and theories of industrial processes; and
 - b. interpreting various types of manufacturing to include health hazards related to the processes.
4. **Teaching Points:**
 - a. describe common workplace operations with specific attention to:
 - (1) welding, cutting and allied operations (Ref: B257, pg 143); and
 - (2) health hazards associated with welding operations to include (Ref: B257, pg 145):
 - (a) shielded metal arc (SMA) welding (rod, stick welding) (Ref: B257, pg 145-148); and
 - (b) gas-shielded metal arc welding semi-automatic welding (Ref: B257, pg 149-150);
 - b. describe health hazards associated with Tungsten Inert Gas (TIG) and Metal Inert Gas (MIG) welding (Ref: B257, pg 151);
 - c. describe other types of welding processes;
 - d. describe submerged arc welding (Ref: B257, pg 151);

- e. describe cutting, scarfing and gouging (Ref: B257, pg 152);
- f. describe brazing (Ref: B257, pg 152-154);
- g. describe metal thermal spraying. (Ref: B257, pg 154-155);
- h. describe degreasing (Ref: B257, pg 155-159);
- i. describe metal cleaning (Ref: B257, pg 160-161);
- j. describe electroplating (Ref: B257, pg 161-163);
- k. describe metal machining (Ref: B257, pg 164-165);
- l. describe heat treating (Ref: B257, pg 166);
- m. describe painting (Ref: B257, pg 167-168);
- n. describe woodworking processes with specific attention to (Ref: B20E, pg 86.2 paras 1-13):
 - (1) flowchart for wood furniture manufacturing (Ref: B20E, pg 86.3);
 - (2) machining safety (Ref: B20E, pg 86.2-86.5);
 - (3) wood dust hazards (Ref: B20E, pg 86.5);
 - (4) assembly hazards (Ref: B20E, pg 86.5-86.6); and
 - (5) finishing hazards (Ref: B20E, pg 86.6); and
- o. describe the nature of common industrial products with specific attention to:
 - (1) organic high polymers (Ref: B257, pg 169-170);
 - (2) plastics (Ref: B257, pg 171-174);
 - (3) elastomers (Ref: B257, pg 175-176); and
 - (4) synthetic fibers (Ref: B257, pg 177).

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5. **Time:**

- a. 14 x 50 min pds – IL;
- b. 4 x 50 min pds – D; and
- c. 7 x 50 min pds – EC.

Total EO time = 900 min; and

Total EC time = 350 min.

6. **Method of Instruction:**

- a. IL interactive lecture; and
- b. D demonstration (shop visits/presentation).

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions; and
- b. D the demonstration method is used to provide the student with a correct and detailed example of the procedure.

8. **References:**

- a. B20E Encyclopedia of occupational health and safety. Vol 1, 4th ed., c1998; and
- b. B257 Recognition of Health Hazards in Industry Author: William A. Burgess.

9. **Training Aids:**

- a. B257: Recognition of Health Hazards in Industry Author: William A. Burgess (held in PMed Lab and PMed Trg Cell).

10. **Learning Aids:**

- a. student B257.

11. **Test Details:** the PMed Tech QL6A student will describe common industrial processes by developing a detail practical flowchart and conduct a presentation IAW the following criteria:

- a. develop a detailed flowchart of an industrial process with specific attention to:
 - (1) receiving of the raw material;
 - (2) handling the raw material;
 - (3) storage of raw material;
 - (4) transport raw material from storage to process;
 - (5) processing of raw material;
 - (6) assembly of material into product;
 - (7) disposal of waste materials;
 - (8) final product;
 - (9) transport of final product to storage; and
 - (10) distribution of products;
 - b. report the flowchart in a 10 minute presentation to the class by:
 - (1) using appropriate selection of media and providing a B257 to the class;
and
 - (2) be prepared for a 5 minute post-presentation discussion;
 - c. the PMed Tech QL6A student's flowchart and presentation will be assessed separately as **satisfactory/unsatisfactory**. Due to the critical nature of the material learned in this EO, the student's knowledge will be verified and confirmed throughout the entire course in other homework and practical assignments; and
 - d. due to the critical nature of this knowledge, practical application will be verified in both PC 003 and PC 004.
12. **Remarks:** arrangement will be made to access various workshops to view processes.

EO 003.04

1. **Performance:** Apply Theories and Principles of Ventilation.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) equipment:
 - (a) Alnor;
 - (b) Accu-Balance; and
 - (c) Veloci-Cal; and
 - (3) access to PMed Lab; and
 - b. denied: assistance and/or supervision.
3. **Standard:** IAW specified references the PMed Tech QL6A student will apply theories and principles of ventilation by:
 - a. employing problem solving skills to practical applications;
 - b. demonstrating mathematical problem solving techniques and operation of data gathering equipment for industrial health work place situations involving ventilation;
 - c. demonstrating the theoretical engineering principles of ventilation; and
 - d. evaluating ventilation systems using appropriate equipment.
4. **Teaching Points:**
 - a. explain the general principles of ventilation with specific attention to:
 - (1) basic principles (Refs: C197E, pg 541; C205E, pg 1-2 art 1.1);
 - (2) supply systems (Ref: C205E, pg 1-2 art 1.2);
 - (3) exhaust systems to include:

- (a) general/local (Ref: C205E, pg 1-2 art 1.3);
 - (4) basic definitions to include (Ref: C205E, pg 1-3 art 1.4):
 - (a) standard conditions (Refs: C197E, pg 554; C205E, pg 1-3);
 - (b) pressure (Ref: C197E, pg 554);
 - (c) static pressure (Refs: C197E, pg 554; C205E, pg 1-3);
 - (d) velocity pressure (Refs: C197E, pg 554; C205E, pg 1-3);
 - (e) total pressure (Refs: C197E, pg 554; C205E, pg 1-4);
 - (f) flow rate (Ref: C197E, pg 544);
 - (g) hood entry loss (Refs: C197E, pg 544; C205E, pg 1-6 and 1-7);
 - (h) loss factor (Refs: C197E, pg 544; C205E, pg 1-7 and 1-8); and
 - (i) coefficient of entry (Refs: C197E, pg 544; C205E, pg 1-7);
 - (5) principles of air flow (Ref: C205E, pg 1-4 and 1-5 art 1.5);
 - (6) accelerations of hood and entry losses (Ref: C205E, pg 1-6 and 1-7 art 1.6);
 - (7) duct losses (Ref: C205E, pg 1-7 and 1-9 art 1.7);
 - (8) multiple-hood exhaust systems (Refs: C197E, pg 562-563; C205E, pg 1-9 art 1.8); and
 - (9) air flow characteristics of blowing and exhausting (Ref: C205E, pg 1-10 art 1.9);
- b. explain general industrial ventilation with specific attention to:
- (1) basic principles (Ref: C205E, pg 2-2 art 2.1);
 - (2) dilution ventilation principles (Ref: C205E, pg 2-2 art 2.2);
 - (3) dilution ventilation for health (Ref: C205E, pg 2-2 art 2.3);
 - (4) mixtures – dilution ventilation for health (Ref: C205E, pg 2-6 and 2.7 art 2.4);

- (5) dilution ventilation for fire and explosion (Ref: C205E, pg 2-7 art 2.5);
- (6) fire dilution ventilation for mixtures (Ref: C205E, pg 2-8 art 2.6); and
- (7) ventilation for heat control (Ref: C205E, pg 2-8 art 2.7);
- c. explain local exhaust hoods with specific attention to:
 - (1) basic principles (Ref: C205E, pg 3-2 art 3.1);
 - (2) contaminant characteristics (Ref: C205E, pg 3-2 art 3.2);
 - (3) hood types (Ref: C205E, pg 3-2 art 3.3);
 - (4) hood design factors to include (Ref: C205E, pg 3-2 art 3.4):
 - (a) hood types (Ref: C205E, pg 3-2 art 3.3, and 3-12 fig 3.11);
 - (5) hood losses (Ref: C205E, pg 3-15, 3-17 art 3.5);
 - (6) minimum duct velocity (Ref: C205E, pg 3-18 art 3.6);
 - (7) special hood requirements (Ref: C205E, pg 3-18 art 3.7); and
 - (8) hot processes (Ref: C205E, pg 3-19 – 3.21 art 3.8);
- d. explain air cleaning devices with specific attention to:
 - (1) basic principles (Ref: C205E, pg 4-2 art 4.1);
 - (2) selection of dust collection equipment (Ref: C205E, pg 4-2 – 4-3 art 4.2);
 - (3) dust collector type (Ref: C205E, pg 4-3 – 4-23 art 4.3);
 - (4) control of mist gas, and vapour contaminant (Ref: C205E, pg 4-23 art 4.5);
 - (5) gaseous contaminant collectors (Ref: C205E, pg 4-23 – 4-29 art 4.6);
 - (6) unit collector (Ref: C205E, pg 4-29 art 4.7);
 - (7) selection of filtration equipment (Ref: C205E, pg 4-30 – 4.34 art 4.9);

- (8) radioactive and high toxicity operations (Ref: C205E, pg 4-34 – 4-35 art 4.10); and
 - (9) explosion venting (Ref: C205E, pg 4-35 – 4-36 art 4.11);
- e. explain fans with specific attention to:
 - (1) basic principles (Refs: C197E, pg 568; C205E, pg 6-2 art 6.1); and
 - (2) basic definition (Refs: C197E, pg 568-570; C205E, pg 6-2 art 6.2);
- f. recognize specific operations with specific attention to the following (Ref: C205E, pg 10-1 paras 1-3):
 - (1) battery charging (Ref: C205E, pg 10-6 – 10-7);
 - (2) clean rooms (Ref: C205E, pg 10-10);
 - (3) gas treatment (Ref: C205E, pg 10-28);
 - (4) kitchen equipment (Ref: C205E, pg 10-35);
 - (5) laboratory ventilation (Ref: C205E, pg 10-40 – 10-41);
 - (6) machining (Ref: C205E, pg 10-61 – 10-62);
 - (7) movable exhaust hoods (Ref: C205E, pg 10-95);
 - (8) open surface tank (Ref: C205E, pg 10-99);
 - (9) push-pull ventilation to include (Ref: C205E, pg 10-113):
 - (a) exhaust hood and exhaust flow (Ref: C205E, pg 10-115); and
 - (b) non open surface tank processes (Ref: C205E, pg 10-116);
 - (10) painting operations (Ref: C205E, pg 10-118);
 - (11) mechanical surface cleaning and finishing (Ref: C205E, pg 10-128);
 - (12) vehicle ventilation (Ref: C205E, pg 10-148);

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- (13) welding and cutting to include (Ref: C205E, pg 10-153):
 - (a) general recommendations (Ref: C205E, pg 10-153);
 - (14) woodworking (Ref: C205E, pg 10-160); and
 - (15) miscellaneous operations (Ref: C205E, pg 10-177 – 10-84 (ranges) (range design));
- g. explain ventilation aspects of IAQ with specific attention to:
- (1) basic principles (Ref: C205E, pg 8-2 art 8.1);
 - (2) dilution ventilation for IAQ (Ref: C205E, pg 8-2 art 8.2);
 - (3) Heating, Ventilation and Air Condition (HVAC) components and system types (Ref: C205E, pg 8-2 – 8-11 art 8.3);
 - (4) HVAC components, functions and malfunctions to include (Ref: C205E, pg 8-11 art 8.4):
 - (a) outdoor air;
 - (b) dampers;
 - (c) air cleaning;
 - (d) heating/cooling coils;
 - (e) fans;
 - (f) humidifiers/dehumidifiers;
 - (g) supply air distribution;
 - (h) return air grilles; and
 - (i) return air;
 - (5) HVAC standards maintaining adequate IAQ (Ref: C197E, pg 600-602);
 - (6) trouble shooting HVAC systems (Ref: C197E, pg 605-606); and
 - (7) operation and maintenance (Ref: C197E, pg 606); and

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- h. explain the monitoring and testing of ventilation systems with specific attention to:
 - (1) basic principles (Ref: C205E, pg 9-2 art 9.1);
 - (2) computing air velocity and airflow rate (Ref: C205E, pg 9-3 – 9-8 art 9.2);
 - (3) representation sampling for velocities (Ref: C205E, pg 9-9 – 9-15 art 9.3 (RA));
 - (4) pressure measurement to include (Ref: C205E, pg 9-15 – 9-16 art 9.4 (RA));
 - (a) using pitot tubes with pressure sensor (Ref: C205E, pg 9-16 – 9-19 art 9.5);
 - (5) selection and use of instruments (Ref: C205E, pg 9-19 – 9-29 art 9.6 (RA));
 - (6) calibration (Ref: C205E, pg 9-29 – 9-34 art 9.7 (RA));
 - (7) practical issues in ventilation system measurement (Ref: C205E, pg 9-34 – 9-35 art (RA)); and
 - (8) monitoring a system (Ref: C205E, pg 9-35 art 9.9 (RA)).

5. **Time:**

- a. 14 x 50 min pds – IL/D;
- b. 7 x 50 min pds – practical EC; and
- c. 2 x 50 min pds – written EC.

Total EO time = 700 min; and

Total EC time = 450 min.

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6. **Method of Instruction:**

- a. IL interactive lecture; and
- b. D demonstration.

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions; and
- b. D the demonstration method is used to provide the student with a correct and detailed example of the procedure.

8. **References:**

- a. C197E Fundamental of Industrial Hygiene: occupation safety and health series. 4th Ed. National Safety Council, Itasca, Ill. c1996; and
- b. C205E Industrial ventilation: a manual of recommended practice, 25th ed. American Conference of Governmental Industrial Hygienists. C2004.

9. **Training Aids:**

- a. nil.

10. **Learning Aids:**

- a. student handout.

11. **Test Details:**

- a. the PMed Tech QL6A student shall apply theories and principles of ventilation through a minimum of two homework assignments; and
- b. the PMed Tech QL6A student shall use the ventilation equipment IAW a checklist and will be assessed practically as **satisfactory/unsatisfactory**.

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12. **Remarks:**

- a. arrangements will be made to access the ventilation room of the school; and
- b. due to the critical nature of this knowledge, practical application will be verified in both PC 003 and PC 004.

EO 003.05

1. **Performance:** Determine Methods of Controlling Occupational Exposures.
2. **Conditions:**
 - a. given:
 - (1) references; and
 - (2) peer assistance; and
 - b. denied: supervision.
3. **Standard:** IAW specified references the PMed Tech QL6A student will determine methods of controlling occupational exposures by associating the theoretical knowledge of hazards and processes to the appropriate control measures.
4. **Teaching Points:**
 - a. determine methods of control with specific attention to (Ref: C197E, pg 531 paras 1-4):
 - (1) types of control to include (Ref: C197E, pg 532):
 - (a) engineering controls;
 - (b) administrative controls; and
 - (c) PPE;
 - (2) engineering controls to include (Ref: C197E, pg 532-533 paras 6-7):
 - (a) substitution: changing the material (Ref: C197E, pg 537-538);
 - (b) substitution: changing the process (Ref: C197E, pg 538);
 - (c) isolation (Ref: C197E, pg 538-541); and
 - (d) ventilation (Ref: C197E, pg 541-543);
 - (3) administrative controls to include (Ref: C197E, pg 543 para 8):
 - (a) reduction of work period (Ref: C197E, pg 543-544);

- (b) wet methods (Ref: C197E, pg 544);
 - (c) personal hygiene (Ref: C197E, pg 544-545);
 - (d) housekeeping and maintenance (Ref: C197E, pg 545); and
 - (e) maintenance provisions (Ref: C197E, pg 545);
- (4) special control methods (Ref: C197E, pg 546);
- (5) waste disposal (Ref: C197E, pg 546);
- (6) PPE to include (Ref: C197E, pg 546 paras 9-10):
 - (a) protective clothing (Ref: C197E, pg 548-549);
 - (b) eye and face protection (Ref: C197E, pg 549, B20E vol 1 section 31.3 – 31.4); and
 - (c) hearing protection (Ref: C197E, pg 549-550); and
- (7) education and training (Ref: C197E, pg 550-551); and
- b. determine appropriate respiratory protection with specific attention to:
 - (1) classes of respiratory protective devices to include (Ref: C197E, pg 626 para 2):
 - (a) air purifying respirators (Ref: C197E, pg 626 para 2);
 - (b) atmosphere supplying respirators (Ref: C197E, pg 634 para 2); and
 - (c) combination air-purifying and atmosphere-supplying device (Ref: C197E, pg 638 para 4);
 - (2) respirator classification to include (Ref: C197E, pg 626 para 3):
 - (a) quarter face;
 - (b) half face; and
 - (c) full face;

- (3) air purifying devices to include:
 - (a) aerosol-removing respirators (Ref: C197E, pg 626-630);
 - (b) gas/vapour-removing respirators (Ref: C197E, pg 630-632);
 - (c) combination aerosol filter/gas or vapour-removing respirators (Ref: C197E, pg 632-633); and
 - (d) powered air purifying respirators (Ref: C197E, pg 633-634);
- (4) atmosphere supplying respirators to include (Ref: C197E, pg 634 para 2):
 - (a) air line respirators (Ref: C197E, pg 634-636);
 - (b) Self-Contained Breathing Apparatus (Ref: C197E, pg 636-637); and
 - (c) the combination of Self-Contained Breathing Apparatus and air line respirators (Ref: C197E, pg 637-638);
- (5) combination air purifying and atmosphere supplying devices (Ref: C197E, pg 638-639);
- (6) respirator selection (Ref: C197E, pg 639, C94E, pg 14-16);
- (7) hazard determination (including skin absorption and warning properties) (Ref: C197E, pg 640-641);
- (8) Immediately Dangerous to Life or Health (IDLH) (Ref: C197E, pg 641-642);
- (9) Lower Explosive Limit (LEL) and fire fighting (Ref: C197E, pg 642);
- (10) Assigned Protection Factors (APF) (Ref: C197E, pg 643);
- (11) selection of respirators B196E part 3, pg 32-36);
- (12) respirator fit testing to include:
 - (a) qualitative fit testing (Ref: C197E, pg 645); and
 - (b) quantitative fit testing (Ref: C197E, pg 649-651); and

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(13) cleaning, maintenance, inspection and storage to include (Ref: C197E, pg 623):

- (a) cleaning and sanitizing (Ref: C197E, pg 623);
- (b) inspection (Ref: C197E, pg 623);
- (c) repair (Ref: C197E, pg 623); and
- (d) storage (Ref: C197E, pg 623).

5. **Time:**

- a. 17 x 50 min pds – IL/D; and
- b. 2 x 50 min pds – assignment debrief.

Total EO time = 750 min.

6. **Method of Instruction:**

- a. IL interactive lecture; and
- b. D demonstration.

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions; and
- b. D the demonstration method is used to provide the student with a correct and detailed example of the procedure.

8. **References:**

- a. B20E Encyclopedia of Occupational Health and Safety. Vol 1-4 - 4th ed., c1998;
- b. B196E Department of National Defence Respiratory Protection Program =
Ministère de la Défense Nationale - Programme de protection des voies
respiratoires. 2005/2006
http://otgmati000041.ottawa-hull.mil.ca/servlet/dticsGetDocument?r_object_id=09000fa0800bd1a4;

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- c. C94E Selection, Use and Care of Respirators (reaffirmed 1997) CAN/DSA-Z94, 4-93. A National Standard of Canada. CSA - Toronto, ON. c2002; and
- d. C197E Fundamental of Industrial Hygiene: occupation safety and health series. 4th ed. National Safety Council, Itasca, Ill. c1996.

9. **Training Aids:**

- a. 2 x firefighter films (respiratory protection).

10. **Learning Aids:**

- a. student handbook.

11. **Test Details:**

- a. the PMed Tech QL6A student shall determine methods of controlling occupational exposures through a homework assignment (EC) where the student must obtain a minimum of 70% for a satisfactory result; and
- b. due to the critical nature of this knowledge, practical application will be verified in both PC 003 and PC 004.

12. **Remarks:** nil.

EO 003.06

1. **Performance:** Collect Occupational Health Risk Data.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) access to industrial processes (facilities);
 - (3) instructor supervision;
 - (4) peers assistance;
 - (5) PPE; and
 - (6) checklist; and
 - b. denied: nil.
3. **Standard:** IAW specified references the PMed Tech QL6A student shall collect occupational health risk data, paying specific attention to:
 - a. gathering information from research, interviews and investigations;
 - b. identifying existing on-site health hazards and potential sources;
 - c. identifying existing control measures; and
 - d. compiling detailed information IAW the student handbook.
4. **Teaching Points:**
 - a. describe general principles and theories for gathering and collecting data (Ref: C197E, pg 453-454);
 - b. describe the basic approach to hazard recognition (Ref: C197E, pg 454);
 - c. explain the use and importance of a literature review that should be conducted prior to data collection (including all CF occupational programs) (Ref: C197E, pg 454-455);

- d. describe the inventory process (Ref: C197E, pg 455);
- e. describe the various processes or operations that students will be encountering (Ref: C197E, pg 455-546);
- f. describe the process flow sheet (Ref: C197E, pg 456-458);
- g. describe the checklists with specific attention to (Ref: C197E, pg 458):
 - (1) overall process or operation (Ref: C197E, pg 458); and
 - (2) equipment (Ref: C197E, pg 458-459);
- h. describe cleaning methods (Ref: C197E, pg 459);
- i. describe process safety management (Ref: C197E, pg 459-460); and
- j. perform a field survey with specific attention to (Ref: C197E, pg 460):
 - (1) sensory perception (Ref: C197E, pg 460-461);
 - (2) control measures in use (Ref: C197E, pg 461); and
 - (3) observations and interview (Ref: C197E, pg 461).

5. **Time:**

- a. 7 x 50 min pds – IL/D;
- b. 6 x 50 min pds – PE; and
- c. 2 x 50 min pds – debrief/GD.

Total EO time = 800 min.

6. **Method of Instruction:**

- a. IL interactive lecture;
- b. D demonstration;
- c. PE practical exercise; and
- d. GD guided discussion.

Drafted May 2016

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking question, commenting or responding to instructor questions;
- b. D the demonstration method is used to provide the student with a correct and detailed example of the procedure;
- c. PE the practical exercise method is used to allow students to practice and correct errors while progressing through the exercise; and
- d. GD students discuss issues to share knowledge, opinions and feelings about the subject matter. A facilitator guides and mediates the exchange.

8. **References:**

- a. C197E Fundamental of Industrial Hygiene: occupation safety and health series. 4th ed. National Safety Council, Itasca, Ill. c1996.

9. **Training Aids:**

- a. nil.

10. **Learning Aids:**

- a. PPE checklist;
- b. equipment/supplies checklist;
- c. hygiene walkthrough survey checklist;
- d. pre-walkthrough activities checklist;
- e. conducting the walkthrough survey checklist; and
- f. site walkthrough tour checklist.

11. **Test Details:** the PMed Tech QL6A student shall collect occupational health risk data through a practical exercise. Contents of file folder will be assessed IAW the checklist. The students will be assessed as **satisfactory/unsatisfactory**. A one-on-one debrief will offer the student an opportunity to receive feedback on their assessment prior to writing a report (EO 003.07) and how to gather data for PC 003.

12. **Remarks:**

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- a. the data from EO 003.06 must be retained for report writing on EO 003.07;
- b. there will be an oral board conducted at the end of PO 004, which will test the performance objectives of PO 003 and PO 004;
- c. due to the critical nature of the material learned in this EO, the PMed Tech QL6A student's knowledge will be verified and confirmed in a practical PC 003. The practical PC will consist of 2 parts: a complete inspection of a facility and a detailed written report. The PMed Tech QL6A student will complete the inspection in teams of three and the report will be conducted individually. The student will be assessed as **pass/fail** IAW checklists for the inspection and written report; and
- d. arrangements will be made to access workshops.

EO 003.07

1. **Performance:** Write an Occupational Health Inspection Report.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) completed checklist/information from inspection;
 - (3) computer (DWAN); and
 - (4) peer assistance; and
 - b. denied: instructor supervision.
3. **Standard:** IAW specified references the PMed Tech QL6A student will write an occupational health inspection report to the Chain of Command with specific attention to:
 - a. analyzing data/observations;
 - b. integrating information; and
 - c. formulating conclusions and recommendations.
4. **Teaching Points:**
 - a. write a comprehensive inspection report with specific attention to (Ref: A80B):
 - (1) the circumstances leading up to the inspection;
 - (2) workplace description;
 - (3) provides results of preliminary assessment to include:
 - (a) personal control measures;
 - (b) collective control measures;
 - (c) PPE; and
 - (d) respiratory protection;

- (4) identify all potential health hazards;
 - (5) formulate interim recommendations;
 - (6) advise on occupational medical measures;
 - (7) identify requirement for occupational health survey; and
 - (8) promote occupational health programmes; and
- b. complete schematic of floor plan and flow chart **if required.**

5. **Time:**

- a. 1 x 50 min pd – GD;
- b. 7 x 50 min pds – PE; and
- c. 4 x 50 min pds – debrief.

Total EO time = 600 min.

6. **Method of Instruction:**

- a. GD guided discussion; and
- b. PE practical exercise.

7. **Substantiation:**

- a. GD student discuss issues to share knowledge, opinions and feelings about the subject matter. A facilitator guides and mediates the exchange; and
- b. PE the practical exercise method is used to allow students to practice and correct errors while progressing through the exercise.

8. **References:**

- a. A80B Staff and writing procedures for the Department of National Defence and the Canadian Forces = Procédures d'état-major et correspondance du ministère de la Défense Nationale et des Forces canadiennes. Ottawa, ON.: DND, c.1990
<http://otgmati000041.ottawa-hull.mil.ca/docFetch?objId=09000fa0800a717a&format=pdf>.

9. **Training Aids:**

- a. nil.

10. **Learning Aids:**

- a. service paper template; and
- b. checklist.

11. **Test Details:**

- a. the student shall write an occupational health inspection report through a comprehensive written report in a service paper format that conforms to CF writing policy with specific attention to:
 - (1) advise on control measures;
 - (2) advise on occupational medical measures;
 - (3) advise on PPE;
 - (4) advise on respiratory protection; and
 - (5) promote occupational health programs;
- b. the student will submit the report with corrected file folder from EC 003.06; and
- c. the student will be provided with the appropriate service paper template. The student will be assessed as satisfactory/unsatisfactory. This will offer the student an opportunity to correct deficiencies in report writing prior to conducting PC 003.

Drafted May 2016

12. **Remarks:**

- a. there will be an oral board conducted at the end of PO 004, which will test the performance objectives of PO 003 and PO 004; and
- b. due to the critical nature of the material learned in this EO, the PMed Tech QL6A student's knowledge will be verified and confirmed in a practical PC. The practical PC will consist of 2 parts: a full risk assessment (which includes an inspection of a facility) and a detailed written report. The PMed Tech QL6A student will complete the inspection in teams of three and written report individually. The PMed Tech QL6A student will be assessed as **pass/fail** IAW checklists for the risk assessments and written report.fx

EO 004.01

1. **Performance:** Apply Theories and Principles to Sampling.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) equipment;
 - (3) sampling media; and
 - (4) peer assistance; and
 - b. denied: supervision.
3. **Standard:** IAW specified reference the PMed Tech QL6A student will apply theories and principles to sampling with specific attention to:
 - a. selecting the appropriate sampling methods; and
 - b. demonstrating analytical problem solving skills to interpret results.
4. **Teaching Points:**
 - a. explain monitoring and sampling with specific attention to:
 - (1) rational (Ref: C197E, pg 461);
 - (2) monitoring (Ref: C197E, pg 461);
 - (3) personal monitoring (Ref: C197E, pg 461-463);
 - (4) area monitoring (Ref: C197E, pg 463-464); and
 - (5) biological monitoring and screening to include (Ref: C197E, pg 464-465):
 - (a) medical surveillance (Ref: C197E, pg 465-466);
 - (b) biological exposure indices (Ref: C197E, pg 466);
 - (c) combined effects (Ref: C197E, pg 466-467); and

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- (d) limitations of biological monitoring (Ref: C197E, pg 467);
- b. explain sampling with specific attention to:
 - (1) strategy (Ref: C197E, pg 467-468);
 - (2) what and how to sample (Ref: C197E, pg 468);
 - (3) where to sample (Ref: C197E, pg 468);
 - (4) whom to sample (Ref: C197E, pg 468-469);
 - (5) when to sample (Ref: C197E, pg 469-470);
 - (6) how long to sample (Ref: C197E, pg 470);
 - (7) what to note during sampling (Ref: C197E, pg 470);
 - (8) how many samples to take (Ref: C197E, pg 470);
 - (9) when to stop monitoring (Ref: C197E, pg 470 and 472);
 - (10) who should conduct sampling (Ref: C197E, pg 472); and
 - (11) required accuracy and precision to include (Ref: C197E, pg 472):
 - (a) accuracy (Ref: C197E, pg 472); and
 - (b) precision (Ref: C197E, pg 472-473);
- c. describe NIOSH Manual of Analytical Methods (NMAM) to include:
 - (1) purpose and scope (Ref: B18E chap A); and
 - (2) how to use NMAM (Ref: B18E chap B);
- d. explain sampling methods with specific attention to (Ref: C197E, pg 494-496):
 - (1) blanks (Ref: C197E, pg 496 (last para before calibration));
- e. explain Laboratory (Ref: C197E, pg 501 fig 16-24);
- f. explain sampling technique to include (Ref: C197E, pg 500-504 fig 16-24, 16-25, 16-26):
 - (1) mould sampling technique (Ref: B38E, pg 27-28);

- g. explain TWA (Ref: C197E, pg 477-478);
- h. explain Biological Exposure Indices (BEI) with specific attention to:
 - (1) documentation (Ref: C139E, pg 83-84);
 - (2) relationship of BEIs and TLVs (Ref: C139E, pg 84);
 - (3) specimen collection (Ref: C139E, pg 84-85);
 - (4) urine specimen acceptability (Ref: C139E, pg 85);
 - (5) quality assurance (Ref: C139E, pg 85-86);
 - (6) notations (Ref: C139E, pg 86); and
 - (7) application of BEIs (Ref: C139E, pg 86-87);
- i. describe the Interpretation of results with specific attention to (Ref: C197E, pg 479):
 - (1) comparison with standards and guidelines (Ref: C197E, pg 479-480);
 - (2) limitations of standards (Ref: C197E, pg 480-481); and
 - (3) comparison of results with other data (Ref: C197E, pg 481); and
- j. explain record keeping (Ref: C197E, pg 504).

5. **Time:**

- a. 4 x 50 min pds – IL;
- b. 3 x 50 min pds – CS;
- c. 4 x 50 min pds – PE; and
- d. 3 x 50 min pds – GD.

Total EO time = 700 min.

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6. **Method of Instruction:**

- a. IL interactive lecture;
- b. CS case study;
- c. PE practical exercise; and
- d. GD guided discussion.

7. **Substantiation:**

- a. IL the interactive lecture method is used to present trainees with an oral presentation where they can participate by asking questions, commenting or responding to instruction questions;
- b. CS students to respond to the description of a scenario related to the target performance, examining the facts and incidents of the case, to critically analyze them and develop solutions;
- c. PE the practical exercise method is used to allow students to practice and correct errors while progressing through the exercise; and
- d. GD students discuss issues to share knowledge, opinions and feelings about the subject matter. A facilitator guides and mediates the exchange.

8. **References:**

- a. B18E NIOSH Manual of Analytical Methods (NMAM) (Annex C)
<http://www.cdc.gov/niosh/nmam/chaps.html>);
- b. B38E Mould in the Workplace - A Basic Guide, 1st ed., Canadian Centre for Occupational Health and Safety. c2004;
- c. C139E TLVs and BEIs Threshold Limit Values for Chemical Substances and Physical Agents. Biological Exposure Indices - Cincinnati, Ohio. ACGIH c2006; and
- d. C197E Fundamental of Industrial Hygiene: Occupation Safety and Health Series. 4th ed. National Safety Council, Itasca, Ill. c1996.

9. **Training Aids:**

- a. references.

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10. **Learning Aids:**

- a. case study; and
- b. handout prepared by the syndicate.

11. **Test Details:**

- a. the PMed Tech QL6A student shall apply theories and principles to sampling through a case study exercise where the student in a syndicate activity will be assessed as **satisfactory/unsatisfactory**. Due to the critical nature of the material learned in this EO, the student's knowledge will be verified and confirmed throughout the entire course in other homework, tests and practical assignments; and
- b. this will be presented as a handout (1 copy for each student and standards) and not as a PowerPoint presentation.

12. **Remarks:** nil.

EO 004.02

1. **Performance:** Perform an Occupational Health Survey.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) occupational health inspection report;
 - (3) scenario;
 - (4) equipment;
 - (5) access to industrial workshops; and
 - (6) peer assistance; and
 - b. denied: supervision.
3. **Standard:** IAW specific references and the Survey Checklist the PMed Tech QL6A student shall perform an occupational health survey by:
 - a. evaluating information gathered from inspection;
 - b. developing a survey plan;
 - c. implementing the survey plan;
 - d. compiling survey data;
 - e. analyzing survey data; and
 - f. composing a written report with recommendations to Chain of Command.
4. **Teaching Points:**
 - a. determine the evaluating process utilizing: The Occupational Health (OH) Survey (Ref: B18E, pg 107-108);

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- b. determine the purpose and scope of survey with specific attention to (Ref: B18E, pg 108):
 - (1) comprehensive OH survey (Ref: B18E, pg 108);
 - (2) specific limited survey (Ref: B18E, pg 108); and
 - (3) compliance survey (Ref: B18E, pg 108);
- c. review past reports (Ref: B18E, pg 115-116);
- d. determine which survey will be utilized:
 - (1) preliminary (qualitative) (Ref: B18E, pg 116-117); and
 - (2) field survey (quantitative) (Ref: B18E, pg 117);
- e. estimate range of contaminant concentrations (Ref: B18E, pg 117-118);
- f. review sampling and analytical methods available (Ref: B18E, pg 118-119);
- g. select equipment (Ref: B18E, pg 119-120);
- h. select PPE (Ref: B18E, pg 120);
- i. prepare a tentative sampling strategy (Ref: B18E, pg 120-121);
- j. perform field survey with specific attention to (Ref: B18E, pg 121-122):
 - (1) where;
 - (2) when;
 - (3) whom;
 - (4) how long;
 - (5) how many to collect; and
 - (6) how to obtain sample;
- l. determine sampling/analytical procedures (Ref: B18E, pg 123-124);
- m. complete interpretation of results (Ref: B18E, pg 124);

- n. determine TWA exposures with specific attention to (Ref: B18E, pg 124):
 - (1) analysis short term (Ref: B18E, pg 124-125);
 - (2) comparing results and standards (Ref: B18E, pg 125); and
 - (3) comparing results and previous data (Ref: B18E, pg 125);
- o. determine other evaluations involving the occupational health to complete reviews, interpretations and report results (Ref: B18E, pg 125-127); and
- p. write a comprehensive survey report with specific attention to:
 - (1) description of circumstances leading up to the survey;
 - (2) workplace description and processes;
 - (3) details pertaining to equipment and methodology utilized;
 - (4) results of monitoring or sample data;
 - (5) interpretation of sample data and observations;
 - (6) correctives measures;
 - (7) identify requirement for follow-up or further study;
 - (8) schematic of floor plan and flow chart; and
 - (9) promoting occupational health programmes.

5. **Time:**

- a. 3 x 50 min pds – IL;
- b. 5 x 50 min pds – D;
- c. 7 x 50 min pds – PE (workshop);
- d. 7 x 50 min pds – PE (report writing); and

- e. 4 x 50 min pds – debrief.

Total EO time = 1300 min.

6. **Method of Instruction:**

- a. IL interactive lecture;
- b. D demonstration; and
- c. PE practical exercise.

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions;
- b. D the demonstration method is used to provide the student with a correct and detailed example of the procedure; and
- c. PE the practical exercise methods is used to allow students to practice and correct errors while progressing through the exercise.

8. **References:**

- a. B18E The occupational environment: its evaluation & control. Washington, D.C: National Institute for occupational Safety and Health, c1973
<http://www.cdc.gov/niosh/pdfs/74-177.pdf>.

9. **Training Aids:**

- a. nil.

10. **Learning Aids:**

- a. references;
- b. occupational health inspection report;
- c. scenario;
- d. checklist (Annex A to EO 004.02);
- e. service paper example (Annex B to EO 004.02); and

- f. access to industrial workshops access to workshop.

11. **Test Details:** the PMed Tech QL6A student shall perform an occupational health survey (at the same workshop utilized during EC 003.06 and 003.07) through a practical case study exercise where the instructor will critique the student's data gathering exercise and report (including the completed checklist and report from the survey of a facility). The PMed Tech QL6A student will be assessed as **satisfactory/unsatisfactory**. A one-on-one debrief will offer the student an opportunity to receive feedback on their assessment prior to PC 004.

12. **Remarks:**

- a. the student will write a report of occupational health survey in a service paper format (Annex B to EO 004.02) including file folder IAW the checklist;
- b. due to the critical nature of the material learned in this EO, the student's knowledge will be verified and confirmed in a practical PC. The practical PC will consist of three parts: a complete survey of a facility, a detailed written report and an oral board. The student will complete the survey in teams of three and reports and oral board individually. The student will be assessed as **pass/fail** IAW checklists for the survey, written report and oral board. The oral board will be testing the knowledge learned during this entire course; and
- c. arrangements will be made to access industrial workshops.

EO 004.03

1. **Performance:** Perform An Indoor/Outdoor Air Quality Survey.
2. **Conditions:**
 - a. given:
 - (1) references;
 - (2) access to:
 - (a) PMed Lab; and
 - (b) industrial workplaces;
 - (3) equipment;
 - (4) scenario; and
 - (5) peer assistance; and
 - b. denied: instructor assistance.
3. **Standard:** IAW specified references the PMed Tech QL6A student will perform an indoor/outdoor air quality survey by:
 - a. evaluating information gathered;
 - b. developing a survey plan;
 - c. implementing the survey plan;
 - d. compiling survey data;
 - e. analyzing survey data; and
 - f. composing a written report with recommendations to Chain of Command.

4. **Teaching Points:**

- a. discuss the following documents and methodologies as they relate to indoor and outdoor surveys with specific attention to: (Ref: A195E, pg 9):
 - (1) purpose of document (Ref: A195E, pg 9);
 - (2) users (Ref: A195E, pg 9); and
 - (3) investigate methods (Ref: A195E, pg 9);
- b. describe the following theory and principles as it relates to indoor/outdoor air quality with specific attention to (Ref: A195E, pg 10):
 - (1) sick building syndrome and related complaints (Ref: A195E, pg 10);
 - (2) factor affecting indoor air quality (Ref: A195E, pg 11); and
 - (3) ventilation guidelines (Ref: A195E, pg 11);
- c. apply HVAC standards for maintaining adequate IAQ to include:
 - (1) American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) 62-1989: Ventilation for acceptable air quality (Ref: C197E, pg 600-601);
 - (2) ASHRAE 55-1992: Thermal environmental conditions for human occupancy (Ref: C197E, pg 601);
 - (3) ASHRAE 52-1992: Methods of Testing Air Cleaning Devices Used in General Ventilation for Removing Particulate Matter (Ref: C197E, pg 601); and
 - (4) regulatory standards (Ref: C197E, pg 602);
- d. describe communication strategy (Ref: A195E, pg 13);
- e. perform an initial assessment to include (Ref: A195E, pg 15):
 - (1) initial walkthrough (Ref: A195E, pg 15);
 - (2) reviewing the complaint area (Ref: A195E, pg 16); and
 - (3) defining the problem and drawing conclusions (Ref: A195E, pg 17);

- f. perform a detailed assessment to include (Ref: A195E, pg 19 – 52):
 - (1) collecting information about air quality indicators;
 - (2) sampling considerations;
 - (3) overview of monitoring methods and equipment;
 - (4) temperature and humidity;
 - (5) carbon dioxide;
 - (6) carbon monoxide;
 - (7) formaldehyde;
 - (8) particulates;
 - (9) radon (Ref: B20E vol 2, pg 44.10-44.11);
 - (10) volatile organic compounds (VOC) (Ref: A195E, pg 19 – 52); and
 - (11) microbial to include (Ref: A195E, pg 19 – 52):
 - (a) interpretation of results; and
- g. complete the report checklist to include:
 - (1) checklist 21-1 – Building Information Checklist (Ref: C197E, pg 610);
 - (2) checklist 21-2 – Building Owner’s HVAC Documentation and Programs (Ref: C197E, pg 611);
 - (3) checklist 21-3 – Basic Information Checklist for HVAC Systems (Ref: C197E, pg 612);
 - (4) checklist 21-4 – Checklist for HVAC Systems (Ref: C197E, pg 613);
 - (5) checklist 21-5 – Troubleshooting Checklist Typical Problems (Ref: C197E, pg 614);
 - (6) checklist for preventive and minimizing IAQ problems through good HVAC practices (Ref: C197E, pg 615);

- (7) maintenance checklist for common HVAC Components (Ref: C197E, pg 616); and
- (8) checklist for reducing microbial problems in HVAC systems (Ref: C197E, pg 617).

5. **Time:**

- a. 7 x 50 min pds – IL;
- b. 3 x 50 min pds – D;
- c. 7 x 50 min pds – PE (survey); and
- d. 4 x 50 min pds – debrief.

Total EO time = 1050 min.

6. **Method of Instruction:**

- a. IL interactive lecture;
- b. D demonstration; and
- c. PE practical exercise.

7. **Substantiation:**

- a. IL the interactive lecture method is used to present students with an oral presentation where they can participate by asking questions, commenting or responding to instructor questions;
- b. D the demonstration method is used to provide the student with a correct and detailed example of the procedure; and
- c. PE the practical exercise methods is used to allow students to practice and correct errors while progressing through the exercise.

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8. **References:**

- a. A195B Health Canada, Indoor air quality on Office Buildings: A Technical Guide
http://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/air/office_building-immeubles_bureaux/93ehd-dhm166_e.pdf;
- b. B20E Encyclopaedia of Occupational Health and Safety. Vol 1-4, 4th ed., c1998; and
- c. C197E Fundamental of Industrial Hygiene: Occupation Safety and Health Series. 4th ed. National Safety Council, Itasca, Ill. c1996.

9. **Training Aids:**

- a. nil.

10. **Learning Aids:**

- a. references;
- b. access to industrial workplaces; and
- c. scenario.

11. **Test Details:** the PMed Tech QL6A student shall perform an indoor/outdoor air quality survey through a practical exercise including a written report and file folder. The students will be assessed as **satisfactory/unsatisfactory**.

12. **Remarks:**

- a. arrangements will made to access industrial workplaces; and
- b. although the task statement reads “Perform indoor/outdoor quality survey”, the outdoor aspect refers to the importance of taking into account the outdoor environmental conditions and contaminants when conducting an indoor air quality survey.

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WEEKLY INSTRUCTION PROGRAM - CFMSS/CFDSS		Course Director Directing Staff Guest Speaker				1. _____ 8. _____ 2. _____ 9. _____ 3. _____ 10. _____ 4. _____ 11. _____ 5. _____ 6. _____ 7. _____	
Course: _____ Session: _____ Instruction Week: _____							
	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY		
0730 0755							
0800 0850							
0855 0945							
BREAK							
1005 1055							
1100 1150							
LUNCH							
1300 1350							
1355 1445							
BREAK							
1500 1550							
1555 1645							
Evening							

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ADM (A)	SCHOOL ADMINISTRATION
ADM (B)	BASE ADMINISTRATION
GL	GUEST LECTURE
TP	TEACHING POINT
D	DEMONSTRATION
P	PRACTICE
DP	DEMONSTRATION PERFORMANCE
SD	SYNDICATE DISCUSSION
F	FILM OR VHS
GD	GUIDED DISCUSSION
GE	GUIDED EXERCISE

COM LAB	COMPUTER LABORATORY
IPT	INDIVIDUAL PREP TIME
PT	PHYSICAL TRAINING
FTX	FIELD EXERCISE
RM	CLASSROOM
PH	PILLAR HALL
CH	COOPER HALL
Conf Rm	CFHSTC CONF RM
SP	SYNDICATE PRESENTATIONS
VC	VIDEO CONFERENCE

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PARTS THAT MUST BE SHOWN ON A SKILL LESSON PLAN

<u>TIME</u>	<u>CONTENTS</u>	<u>ACTION</u>
	<u>INTRODUCTION</u>	
	<u>WHAT</u> WHAT ARE YOU GOING TO TEACH?	O.B.
	<u>PERFECT DEMO</u> WATCH, I'LL SHOW YOU WHAT YOU WILL BE ABLE TO DO AT THE END OF THE LESSON.	PERFECT DEMO
	OR <u>FINISHED PRODUCT</u> AT THE END OF THE LESSON, THIS IS WHAT YOU'LL...	SHOW FINISHED PRODUCT
	<u>WHERE</u> WHERE IT FITS IN TRAINING. WHERE IT WILL BE APPLIED.	
	<u>WHY</u> REASON FOR TEACHING LESSON.	
	<u>APPROACH</u> THE LESSON WILL BE TAUGHT IN THE FOLLOWING STAGES. (STRESS SAFETY)	
	<u>CONTROL STATEMENT</u> WHEN I DO DEMONSTRATE, YOU <u>WATCH AND</u> <u>LISTEN</u> . DO NOT DO ANYTHING UNTIL I SAY SO.	
	<u>TEST</u> EXPLAIN TEST DETAILS. SILENT DEMO/FINISHED PRODUCT.	
	<u>SAFETY</u>	

Appx 15 - 2/3

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20 MINS	<p><u>STAGE 2 – PRACTICE</u> (AT LEAST ONCE)</p> <p>ALL THE STEPS IN STAGE 2.</p> <p>TRY IT BY YOURSELF!</p> <p>DO IT AGAIN!</p> <p><u>TOTAL PRACTICE</u> (AT LEAST ONCE, MORE IF TIME PERMITS)</p>	<p>CHECK!</p> <p>CHECK!</p>
24 MINS	<p>BOTH STAGES COMBINED AND PRACTICED AS ONE LONG SEEQUENCE</p> <p><u>CONCLUSION</u></p> <p><u>REVIEW</u></p> <p>STRESS THE IMPORTANT POINTS FROM THE LESSON.</p> <p>“REMEMBER, YOU MUST...”</p> <p><u>REMOTIVATION</u></p>	
25 MINS	<p>RE-USE THE WHY OF THE INTRODUCTION AND STRESS THE IMPORTANCE OF THE LESSON.</p> <p>IN FUTURE LESSONS YOU WILL LEARN...</p>	

	<p style="text-align: center;"><u>INTRODUCTION</u></p> <p><u>WHAT</u> WHAT ARE YOU GOING TO TEACH?</p> <p><u>WHERE</u> WHERE IT FITS IN TRAINING. WHERE IT WILL BE APPLIED.</p> <p><u>WHY</u> REASON FOR TEACHING LESSON.</p> <p><u>APPROACH</u> THE LESSON WILL BE TAUGHT IN THE FOLLOWING STAGES...</p> <p><u>CONTROL STATEMENT</u> IF YOU HAVE ANY QUESTIONS DURING THE LESSON RAISE YOUR HAND. WHEN I ASK QUESTIONS, I WILL CHOOSE SOMEONE TO ANSWER. YOU ARE ENCOURAGED TO TAKE NOTES.</p> <p><u>TEST</u> THERE WILL BE AN END OF LESSON (EOL) QUIZ/TEST.</p>	O.B.
2 MINS	<p style="text-align: center;"><u>BODY</u> <u>STAGE 1</u></p> <p><u>INTRODUCTION</u> INTRODUCTION TO THIS STAGE. <u>TP1 – NAME OF TEACHING POINT</u> - AT LEAST 1 X LEADING/SUPPLEMENTAL QUESTION TO ALLOW FOR TRAINEE</p>	V.A.#1

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12 MINS	<p>PARTICIPATION</p> <p>- AT LEAST 1 X VISUAL AID</p> <p>- AT LEAST 1 X VERBAL AID</p> <p><u>TP2 – NAME OF TEACHING POINT</u></p> <p>- AT LEAST 1 X LEADING/SUPPLEMENTAL QUESTION</p> <p>- AT LEAST 1 X VISUAL AID</p> <p>- AT LEAST 1 X VERBAL AID</p> <p><u>TP3 – NAME OF TEACHING POINT</u></p> <p>- AT LEAST 1 X LEADING/SUPPLEMENTAL QUESTION</p> <p>- AT LEAST 1 X VISUAL AID</p> <p>- AT LEAST 1 X VERBAL AID</p> <p><u>CONFIRMATION OF STAGE 1</u></p> <p><u>REVIEW</u></p> <p>WE’VE JUST LOOKED AT THE FIRST THREE POINTS...</p> <p>ARE THERE ANY QUESTIONS?</p> <p>LOOK AT YOUR NOTES.</p> <p>TURN YOUR NOTES OVER.</p> <p>QTC</p> <p>DESIGNED TO PRODUCE TP AS THE ANSWER</p> <p>ANS – TP1</p> <p>QTC</p> <p>ANS – TP2</p> <p>QTC</p> <p>ANS – TP3</p>	<p>V.A.#2</p> <p>V.A.#3</p> <p>RE-USE VA’S</p> <p>RE-USE VA’S</p>
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18 MINS	<p align="center"><u>STAGE 2</u></p> <p align="center"><u>INTRODUCTION</u></p> <p><u>TP4 – (STAGE 2 INSTRUCTED AS PER STAGE 1)</u></p> <p align="center"><u>CONFIRMATION OF STAGE 2</u></p> <p align="center"><u>FINAL SUMMARY</u></p>	SHOW VA'S
19 MINS	<p>WE HAVE JUST COVERED...</p> <p>ARE THERE ANY QUESTIONS ON THE ENTIRE LESSON?</p>	SHOW ALL TP'S
20 MINS	<p align="center"><u>CONCLUSION</u></p> <p><u>REVIEW</u></p> <p>TODAY WE HAVE COVERED...</p> <p>CRITICAL FACTORS OR HIGHLIGHTS ARE...</p> <p>REMEMBER...</p> <p><u>REMOTIVATION</u></p> <p>RE-USE THE WHY OF THE INTRODUCTION AND STRESS THE IMPORTANCE OF THE LESSON.</p> <p>IN FUTURE LESSONS YOU WILL LEARN...</p>	