KAUST RESPIRATORY PROTECTION PROGRAM

1. PURPOSE

The purpose of this document is to provide KAUST researchers, visiting scientists, staff and students, contractors and service providers (hereafter referred to as users) with procedures for the safe selection, maintenance and use of respiratory protective equipment (RPE) to prevent harm when being exposed to potentially harmful airborne contaminants (dusts, fumes, gases etc.). This procedure does not replace the need for engineering controls and safe work practices to reduce or eliminate airborne contaminants. **RPE should not be required when adequate engineering controls (i.e. fume hoods and other local ventilation) are available.**

2. SCOPE

This program applies to all KAUST employees who are required to wear RPE during normal work operations, and during some non-routine or emergency response operations such as a hazardous substance spill. Self-contained breathing apparatus and atmosphere-supplying respirators are included in the scope of this program/procedure.

This Respiratory Protection Program provides voluntary use of respirators for employees under specific requirements in Appendix C.

3. DEFINITIONS

3.1 Aerosols: Airborne solid or liquid particles. Solid or liquid particle suspended in a gaseous medium such as air.

3.2 Hazard Assessment: Means a program to determine any risk from exposure to a hazardous chemical substance associated with any hazard thereof at the workplace in order to identify the steps needed to be taken to remove, reduce or control such hazard.

3.3 Assigned Protection Factor (APF): The minimum anticipated protection provided by a properly functioning respirator or class of respirators to a given percentage of properly fitted and trained users. The higher the APF, the higher the protection provided by the respirator.

3.4 Breakthrough: The penetration of challenge material(s) through a gas or a vapor air-purifying element. The quantity or extent of breakthrough during service life testing is often referred to as the percentage of the input concentration.

3.5 Canister or cartridge: A container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.

3.6 Combination Respirator: A respirator normally used in atmospheres that contain hazards of both particulates and gases, and fitted with both particulate filters and gas/vapor filters.

3.7 Dusts: Solid, mechanically produced particles or fibers; airborne solid particles caused by abrasive procedures such as grinding and cutting.

3.8 Dust Mask (Also called a filtering facepiece): A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.

3.9 Employee Exposure: Exposure to a concentration of an airborne contaminant that would

occur if the employee were not using respiratory protection equipment.

3.10 Filter or Air Purifying: A component used in respirators to remove solid or liquid aerosols from the inspired air.

3.11 Fit Factor: A quantitative estimate of the fit of a particular respirator to a specific individual. This typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.

3.12 Fit Test: The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual.

3.13 Fumes: Airborne particles that occur when metal is heated and suddenly cooled.

3.14 Gas and Vapor Respirators: A respirator fitted with chemical filters (called cartridges or canisters) to remove dangerous gases or vapors from inhaled air. Chemical filters are made to protect against specific gases or vapors, and provide protection only as long as the filter's absorbing capacity is not depleted.

3.15 Gas: An air-like fluid substance which expands freely to fill any space available, irrespective of its quantity.

3.16 Hazard: An agent with the potential to cause harm to people, damage to assets, or an impact on the environment or reputation.

3.17 Hazardous Chemical Substance (HCS): Any toxic, harmful, corrosive, irritant or asphyxiant substance, or a mixture of such substances for which an occupational exposure limit is prescribed or one for which an occupational exposure limit is not prescribed; but which nevertheless creates a hazard to health.

3.18 Health Hazard: A factor of a physical, chemical, biological, ergonomic or psychological nature with the potential to cause harm to the health of people.

3.19 Health Risk Assessment (HRA): A process of identifying, evaluating, controlling and managing health risks, associated with work to prevent acute and chronic health effects.

3.20 IDLH: Immediately Dangerous to Life or Health concentrations.

3.21 Laboratory Safety Representative (LSR): A laboratory staff who is assigned to be the safety representative to improve lab safety, identify hazards, and help to prepare for and deal with emergency situations.

3.22 Likelihood: The probability that a specified consequence will happen.

3.23 Mists: Tiny liquid droplets caused by spraying or blowing operations.

3.24 NIOSH: National Institute for Occupational Safety and Health.

3.25 OEL - Occupational Exposure Limit: Represents the maximum airborne concentration of a hazardous substance to which a worker can be exposed over a period of time without suffering any harmful consequences.

3.26 Particulate Respirators: Respirators (e.g. N95, P100) which capture particles in the air, such as dusts, mists, and fumes. Provide no protection against gases or vapors.

3.27 Physician or other Licensed Health Care Professional (PLHCP): Means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or

all of the health care services required by this program. Unless otherwise specified, reference made to PLHCP in this procedure refers to the KAUST Occupational Medicine Consultant.

3.28 PPE: Personal Protective Equipment.

3.29 Principal Investigator (PI): Lead researcher of a laboratory.

3.30 Program Administrator (PA): A person from the KAUST Research HSE team who is suitably qualified to administer this Respiratory Protection Program.

3.31 Qualitative fit test (QLFT): A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

3.32 Quantitative fit test (QNFT): An assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.

3.33 Respiratory Protective Equipment (RPE): A device which is worn over at least the mouth and nose to prevent the inhalation of airborne hazardous chemical substances. It may have a tight-fitting edging that forms a complete seal with the face or simply consist of a disposable facepiece such as a dust mask. The type conforms to a standard approved by NIOSH or EU.

3.34 Respiratory Protection Program (RPP): A written program developed and implemented with required worksite-specific procedures and elements for required respirator use. Prerequisites for enrollment are medical evaluation, fit testing and respirator training.

3.35 Risk: The combination of the consequence of a specific hazard being released and the likelihood of it happening.

3.36 Risk Assessment: The process of identifying the consequences of the worst case credible scenario arising from the release of a Hazard, and estimating the Likelihood of that scenario.

3.37 Service Life: The period of time that a respirator, cartridge filter/sorbent, or other respiratory equipment provides adequate protection to the wearer.

3.38 Smoke: Atmospheric contaminants resulting from incomplete combustion.

3.39 Tight-Fitting Facepiece: A respiratory inlet covering that forms a complete seal with the face.

3.40 User Seal Check: An action conducted by the respirator user to determine if the respirator is properly seated to the face.

3.41 Vapors: Substances that evaporate from a liquid or solid at ambient temperature and pressure.

3.42 Voluntary Use of Respirators: Employee voluntary wants to wear a respirator from time to time when it is not required or when the exposure has been determined not a hazard.

4. RESPONSIBILITIES

4.1 Principle Investigator (PI)

4.1.1 Provide resources to support and maintain an effective respiratory protection program for their work area.

4.1.2 Consider the feasibility of engineering controls before implementing RRP.

4.1.3 Ensure that health risk assessments are performed to identify and evaluate the respiratory hazards in the workspace.

4.1.4 Ensure the availability of appropriate respirators that are NIOSH certified and are

used in accordance with the terms of that certification.

4.1.5 Ensure staff use the correct RPE based on the respiratory hazards(s) to which the user is exposed.

4.1.6 Where respiratory protective equipment is provided, ensure that it is capable of controlling the exposure to below the OEL for the relevant HCS.

4.1.7 Ensure that respirator users under their supervision, including new hires, have received appropriate training (initial and annual refresher), fit testing and medical evaluation before authorizing work to proceed.

4.1.8 Ensure that issued respiratory equipment is:

- Used and maintained in the prescribed manner;
- Not shared, unless the relevant protection equipment is decontaminated and sterilized.
- Provided with separate containers or storage facilities for when not in use.
- Properly cleaned, maintained, inspected, and stored according to this procedure.

4.1.9 Record the names of respirator users with the laboratory LSR.

4.1.10 Enforce the use of RPE in designated Respirator Zone.

4.1.11 Seek assistance from the Research Safety Department at HSE@kaust.edu.sa if so required or if any uncertainty exists regarding the use of respirators.

4.2 Lab Manager

4.2.1 Apply the Hierarchy of Controls to manage personal protective equipment use.

4.2.2 Verify that RPEs remain effective when the hazard, exposure or controls change.

4.2.3 Ensure proper training, medical evaluation and fit testing where RPE is used.

4.2.4 Ensure a respirator user log is maintained within their service line where respirators are used.

4.3 RPE User

4.3.1 Not permitted to purchase RPE and bring into the workplace for personal use without approval from HSE.

4.3.2 Wear a respirator when and where required, in the manner in which they were trained.

4.3.3 Participate in safety training, respirator fit testing and medical assessments as required by the RPP.

4.3.4 Work in compliance with the procedures outlined in this RPP and the Standard Operating Procedure (SOP) related to the work being conducted.

4.3.5 Conduct a respirator seal check each time they wear a respirator.

4.3.6 Leave the work area to maintain their respirator for the following reasons:

- To clean their respirator if the respirator is impeding their ability to work;
- To change filters or cartridges, or replace parts; or
- To inspect the respirator if it stops functioning as intended.

4.3.7 Care for, maintain and replace their respirators as instructed, and store them in the separate containers or storage facilities provided.
4.3.8 Inform the LSRs or person in charge of respiratory hazards they feel are not adequately addressed in the workplace and of any other concerns that they have regarding this RPP.
4.3.9 Provide input on the effectiveness of the RPP and participate in annual assessments of the program as scheduled by the PA.
4.3.10 Not to wear tight-fitting respirators if they have any condition, such as facial scars and facial hair that prevents these devices from achieving a good seal.
4.3.11 Not to wear headphones, jewelry, or other articles that may interfere with the facepiece-to-face seal.

4.4 Lab Safety Representative (LSR)

4.4.1 Maintain a User Log with the names of respirator users within the laboratory.
4.4.2 Inform the PA of respiratory hazards concerns raised within the laboratory.
4.4.3 Assist/ support in performing a risk assessment of respirators.

4.5 RPP Program Lead

4.5.1 Implement, coordinate and maintain the RPP.
4.5.2 Conduct health risk assessments and determine if respiratory protection is necessary. Revise and update the health risk assessment as needed, and communicate the results to the users.
4.5.3 Provide advice and consultation for engineering controls to eliminate potential exposure to atmospheric contaminants.
4.5.4 Ensure that RPE users are provided with training in the care, maintenance, use and storage of RPEs.
4.5.5 Where applicable, arrange for atmospheric monitoring to be conducted in suspect environments where exposure limits have been established.
4.5.6 Conduct periodic audits to determine the effectiveness of the RPP to ensure that:
- Respirators are being selected, issued and used properly;
- Wearers are trained;
- RPE are worn properly;
- RPE are properly maintained;
- RPE are inspected; and
- RPE are properly stored.

4.4.7. Evaluate the RPP on periodic basis to ensure program effectiveness.
4.4.8. He or she may identify a competent person to conduct Fit Testing in conjunction with the PLHCP.

4.6 Physician or other Licensed Health Care Professional (PLHCP)

4.6.1 Provide input into this procedure during implementation and review.
4.6.2 Arrange for and conduct medical evaluation in accordance with this procedure and make a recommendation on an employee's ability to wear a respirator.

4.6.3 Determine the medical test requirements for respirator medical evaluation using risk-based approach.
4.6.4 Maintain medical records in accordance with this procedure.
4.6.5 Identify a competent person to conduct Fit Testing, and inform the PA.

5. RISK CONTROL

5.1 It is a fundamental principle that exposure to hazardous chemical substances (HCS) should be eliminated or, where this is not reasonably practicable, adequately controlled in the workplace.
5.2 Health hazards are controlled using a hierarchy of controls, or control banding. It recognizes that feasible engineering controls such as ventilation and substitution of less toxic materials and best work practice controls are first considerations **before resorting to the use of PPE**.
5.3 When engineering and work practice control measures are adequate, the use of respirators **are not required/needed**. Respirators have their limitations and are not a substitute for effective engineering and best work practice controls.
5.4 No respirator is capable of preventing all airborne contaminants from entering the wearer's breathing zone. Properly selected and used respirators help protect against certain airborne contaminants by reducing airborne contaminant concentrations in the breathing zone to below the TLV or other recommended exposure level.

6. ASSESSMENT OF POTENTIAL EXPOSURE

6.1 Before resorting to the use of RPE, the PI shall consult with the KAUST Industrial Hygienist and LSR to carry out an exposure assessment to determine if employee is at risk of exposure to HCS.
6.2 Department Managers of non-research operations shall consult with the KAUST Health and Safety Department to carry out an exposure assessment to determine if the employee is at risk of exposure to HCS.
6.3 Department Managers shall ensure that service providers under their control obtain the services of a certified Industrial Hygienist to conduct health risk assessments and workplace exposure monitoring. When making the assessment, the Industrial Hygienist shall keep a record of the assessment and take into account such matters as:
- The HCS to which an employee may be exposed;
- What potential health effects the HCS can have on an employee;
- Where the HCS may be present and in what physical form it is likely to be;
- The route of intake by which and the extent to which an employee can be exposed;
- The nature of the work, process and any realistic deterioration in, or failure of, any control measures;
- Assess the effectiveness of existing controls;
- Make recommendations to address control gaps and improvements.

6.4 The exposure assessment shall be reviewed if:
- There is reason to suspect that the previous assessment is no longer valid; or
- There has been a change in a process involving an HCS or in the methods, equipment or procedures in the use, handling, control or processing of the HCS.

7. RESPIRATOR ZONE

The PI and Department Managers must ensure that:

7.1 Any workplace or part of a workplace under his or her control, where it has been determined that HCS airborne concentration exceeds the Occupational Exposure Limit (OEL) shall be zoned as a respirator zone.

7.2 A respirator zone is clearly demarcated and identified by notices indicating that the relevant area is a respirator zone and that RPE must be worn.

7.3 No person shall enter or work in a respirator zone unless he or she is wearing the required RPE.

8. RESPIRATOR AND CARTRIDGE SELECTION

8.1 Types of respirators approved for use include:

- Half-face negative pressure air purifying with HEPA filter (including disposable N95 dust masks) and/or chemical cartridge;
- Full-face negative pressure air purifying with HEPA filter and/or chemical cartridge;
- Full-face Powered Air Purifying Respirator (PAPR); and
- Self-Containing Breathing Apparatus (SCBA).

8.2 Assigned Protection Factor (APF) is a measure of the degree of protection afforded by a respirator. It is defined as the ratio of the concentration of contaminant outside the face mask to that inside of the mask under actual use conditions. For example, a half-mask cartridge respirator, which has a protective factor of 10, will provide protection in an atmosphere with a contaminant concentration up to ten times the exposure limit. Table1 below provides APF for respirators available at KAUST.

8.3 Respirators may not be able to help protect against all of the contaminants present in a particular work environment. Specific limitations are stated on the approval labels and are included with user instructions and limitations. These must be carefully reviewed by the user for each respirator before use.

8.4 Respirators must not impair the user's ability to see, hear, communicate, and move as necessary to perform the job safely. The correct respirator will be selected through a proper HRA that will take into account:

- An evaluation of the respiratory hazards, including a reasonable estimate of the employee exposure to respiratory hazards;
- Considering user factors that may affect respirator performance and reliability;
- Selecting an appropriate NIOSH-certified respirator.

8.5 SCBA shall be used only for emergency response where the concentrations of contaminants are IDLH, when concentrations are unknown, or in atmospheres containing less than 19.5% oxygen. All oxygen deficient (<19.5%) atmospheres are considered IDLH by KAUST.

9. RESPIRATOR CARTRIDGE CHANGE SCHEDULES

9.1 Do not rely on odor thresholds and other warning properties as the primary basis for determining the service life of gas and vapor cartridges and canisters.

9.2 Follow the manufacturer's instructions on change schedules. Use of End of Service of Life Indicators (ESLIs) cartridges/ filters if available, which is how long cartridges or filters can be used before they need to be changed.

9.3 In addition, existing data and experience can be used along with professional judgment for establishing cartridge change schedules.

9.4 Respirator users in KAUST labs and facilities can contact HSE@kaust.edu.sa for advice.

10. RESPIRATOR CLEANING, MAINTENANCE AND STORAGE

10.1 Cleaning and Maintenance

10.1.1 The respirator user is responsible to maintain and clean his/her respirator in accordance with the manufacturer's instructions.

10.1.2 Respirators issued for the exclusive use of an employee are to be cleaned as often as necessary, but at least once a day, using the following guidelines:

- Disassemble respirator, removing any filters, canisters or cartridges.
- Wash the facepiece and associated parts in a mild detergent with warm water. Do not use organics solvents.
- Rinse completely with clean warm water.
- Wipe the respirator with disinfectant wipes (70% Isopropyl Alcohol) to kill bacteria.
- Air-dry in a clean area and reassemble in a clean area, making sure there are no defective parts.
- No components will be replaced or repairs made beyond those recommended by the manufacturer.
- Place in a clean, dry plastic bag or other airtight container.

10.1.3 The user is responsible to check his or her respirator before use to ensure that there is no visible damage to:

- The Facepiece – check for cracks, tears, or holes; facemask distortion and cracked or loose lenses/face shield.
- Valves – check for residue or dirt; cracks or tears in valve material.
- Head straps – Check for breaks or tears; broken buckles.
- Filters/Cartridges- cracks or dents in housing; and
- The proper cartridge for the hazard is present.

10.2 Change Out Schedules

- The PI shall ensure that all filters, cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible.
- Research Safety and HSE to provide recommendation on change out schedules based on the risk assessment.

- Employees wearing protection against particulates, should change the cartridges on their respirators when they first begin to experience difficulty in breathing (resistance) while wearing their masks.

10.3 Storage

- Respirators must be stored in a clean and dry area away from contaminants.
- After cleaning and maintenance, each user will store their respirator in a plastic bag in their own locker if available.
- Each user will have his/her name on the bag, and that bag will only be used to store that employee's respirator.

10.4 Defective Respirators

- Respirators that are defective or have defective parts must be taken out of service immediately. The user must inform the LSR, return the respirator to the KAUST Chemical Warehouse and request a replacement.
- If the user is not given a replacement of the same make, model and size, then the user must be fit tested again.

11. MEDICAL EVALUATION

11.1 RPE have the potential to place a physiological burden on the wearer, and in itself can become a health hazard. Employees assigned to tasks that require RPE use must be physically able to perform the work while using the respirator. Therefore, it is a prerequisite to undergo a medical screening and/or evaluation before being fit tested, trained and enrolled in the KAUST RPP.

11.2 Any employee requires to wear RPE and refuses to complete medical evaluations will not be permitted to wear RPE. For voluntary use of a RPE, the employee shall comply with the requirements of KAUST Voluntary Use of RPE in Appendix C.

11.3 Employees who are required to wear a respirator shall complete KAUST Respirator Medical Evaluation Questionnaire. This questionnaire provides personal health information for the Physician or other Licensed Health Care Professional (PLHCP) to evaluate fitness to wear a respirator.

11.4 The medical evaluation procedure will be as follows:

11.4.1 Affected employees will complete KAUST Respirator Medical Evaluation Questionnaire and return to the PLHCP for review.

11.4.2 The PLHCP will discuss and arrange with the employee further medical investigations and/or tests that he or she deem to be appropriate.

11.4.3 The PLHCP will inform the employee of their medical evaluation outcome, and whether he or she is fit/ not fit to wear RPE. Employees have the right to discuss with the PLHCP their medical evaluation result if they so request.

11.4.4 The PLHCP will provide a Respiratory Protection Certificate to the user, RPP PA and user's PI/Supervisor. The Respiratory Protection Certificate includes only the following information:

- PLHCP's determination of employee's suitability to wear a respirator;
- Any limitations of respirator use;
- Any need for follow-up evaluations; and

- A statement that the employee has been informed of the determination.

11.4.5 With consent from the employee, the PLHCP can engage with PI/Supervisor to discuss alternate RPE or work accommodation.

11.4.6 Respirator fit test will be conducted only when the employee is deemed fit to wear a respirator (Respirator Protection Certificate).

11.4.7 Details of medical evaluation questionnaire and/or medical tests (e.g. spirometry) shall not be disclosed by the PLHCP unless prior consent has been obtained from the employee examined.

11.5 KAUST Respirator Medical Evaluation Questionnaire will be completed for staff initially and 2-yearly thereafter who are required to participate in the RPP. The Respirator Medical Questionnaire shall be completed under the following circumstances:

- The employee reports signs and/or symptoms related to his or her ability to use a respirator, such as shortness of breath, dizziness, chest pains, or wheezing.
- The PI or Department Manager informs the RPP PA that the employee needs to be re-evaluated.
- A change occurs in workplace conditions that may result in an increased physiological burden on the employee.

11.6 The PLHCP will be consulted to provide input into this procedure during implementation and review.

12. RESPIRATOR FIT TEST PROCEDURES

12.1 KAUST Respirator Fit Test procedures will follow the guidelines of the U.S. OSHA 29 CFR 1910.134.

12.2 Employees must be clean shaven as facial hair such as beard, goatee, sideburns, stubble, etc. will interfere with face piece respirator seal. Employees with facial hair are not permitted to wear respirators per RRP Procedure.

12.3 Employees with facial hair due to religious beliefs shall be provided with alternative respiratory equipment such as powered air purifying respirators (PAPRs).

12.4 Fit Test will be performed by a competent person assigned by the KAUST PLHCP and/or PA.

12.5 For negative pressure air purifying respirators, users may rely on either a qualitative or a quantitative fit test procedure for exposure levels less than 10 times the occupational exposure limit.

12.6 For exposure levels greater than 10 times the occupational exposure limit, a quantitative fit test procedure is recommended.

12.7 All employees using a tight-fitting face-piece respirator must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT).

12.8 In addition to fit-testing, manufacturer recommended field checks should be performed by the user each time the respirator is worn (provided as part of respirator training).

12.9 Users must be fit tested with the make, model and size of respirator that they will actually wear.

12.10 Employees using tight-fitting respirators must be fit tested:

- Prior to initial use of the respirator and 2-yearly thereafter;
- Whenever a different respirator (size, style, model or make) is used; and

- Whenever there is a physical change to the employee including excessive weight gain/loss, significant dental changes or any other condition that may interfere with the facepiece seal.

13. TRAINING

13.1 All respirator users are required to successfully complete training prior to using a respirator and 2-yearly thereafter as a refresher training.

13.2 The PA may require more frequent training from a user when there is evidence of incorrect selection, use and care of respiratory protection.

13.3 The training program shall include:

- The nature, extent, and effects of respiratory hazards at KAUST.
- When to use a respirator and a discussion of the function, capabilities and limitations of the selected respirator
- The proper selection, inspection, use (including putting on and taking of), limitations and maintenance of the respirator.
- Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, and discarding.
- Fit testing procedures including instruction on how to don and doff, use and check the seals of the respirator.
- The need for medical screening and evaluation prior to using a tight-seal respirator.
- How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

14. RECORDS

14.1 Medical Evaluation

14.1.1 Records of health screening including the Respirator Medical Evaluation Questionnaires and physical examination records shall be kept by KAUST PLHCP for one year past the end of the period of employment of the person being tested.

14.1.2 Department Managers shall ensure that service providers under their control have a record management system in place to maintain medical evaluation records meeting KAUST requirements.

14.2 Fit Testing

14.2.1 The PA is responsible to ensure that records for all persons registered in the RPP is available.

14.2.2 Fit test records shall be retained for respirator users until the next fit test is administered. The following must be recorded:

- Name of the person tested;
- Date and time of tests;
- Specific make, model, style and size of respirator;
- Exposure source;

- Type of fitting test and test agent used;
- Results of fitting tests;
- Comments on test difficulties, interference by clothing, protective equipment that needs to be worn in conjunction with the respirator, personal fitting problems, e.g. eyeglasses, dentures, unusual facial features, or facial hair; and
- Name of person giving the test.

14.3 Training

14.3.1 Records shall be kept on the type of training each person has received and the dates these training sessions occurred.

14.3.2 The records shall be kept by the HSE Systems Specialist for one year past the end of the period of employment of the person trained.

15. PROGRAM EVALUATION TO ENSURE ONGOING EFFECTIVENSS

15.1 The PA will conduct periodic evaluations of the workplace to ensure that the provisions of this program are being implemented.

15.2 The evaluations will include but are not limited to site inspections, consultations with the PI, LSR's and employees who use respirators, air monitoring and a review of records.

15.3 Corrective actions identified, will be discussed with the applicable PI, Department Manager, LSR, respirator user and addressed through the Corrective Actions Process.

16. REFERENCES

- KAUST Policies
- U.S. OSHA Occupational Safety and Health Standard, 29 CFR 1910.134 – Respiratory Protection
- The U.S. National Institute for Occupational Safety and Health (NIOSH), A Guide To Industrial Respiratory Protection

APPENDIX A: RESPIRATORY PROTECTION CERTIFICATE

Name:		Department/ Lab Location:	
Email:		Work Phone:	
Job Title:		KAUST ID:	

TYPES OF RESPIRATORS YOU MAY USE:

☐ Mandatory Use ☐ Voluntary Use

☐	Filtering Facepiece Respirator (N95)	☐	Half Face Air Purifying
☐	Full Face Air Purifying	☐	Powered Air Purifying Respirator
☐	Airline	☐	Self-Contained Breathing Apparatus (SCBA)
☐	Other (describe):		

After reviewing the medical evaluation results, this employee:

☐	**Is FIT** to wear the respirator(s) listed above.
☐	**Is FIT** to wear respirator(s) with the following limitation(s):
☐	Is required to provide additional medical information.
☐	Requires a follow-up medical examination.
☐	**Is UNFIT** to wear the respirator(s) listed above
Date of medical examination or test (if required):	
Physician's comments:	

The PLHCP has provided a copy of this certification to:

	YES	NO
1) The employee (User).	☐	☐
2) The employee's PI, Supervisor or Person in Charge.	☐	☐
3) The RPP Program Administrator.	☐	☐

Physician's Printed Name:		
Signature:	Date:	Place:

APPENDIX B: RESPIRATORY PROTECTION USER LOG

Lab Name:			LFO Number:		LSR Name:		
	First Name	Last Name	ID Number	Respirator Type & Size	Exposure Source	Fit Testing Date	Respiratory Protection Training Date
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							

APPENDIX C: VOLUNTARY USE OF RESPIRATORS

These guidelines are only applicable to employees who wish to use respirators voluntary, that is, for their own comfort or sense of wellbeing even when there is no recognized hazard are authorized under the following requirements.

Voluntary use of N95/P100 dust masks (filtering facepiece respirators)

Two requirements must be met for the use of N95/P100 dusk masks (NIOSH/ EU approved):

1. A risk assessment conducted by the PI, LSR and/or HSE to ensure that the masks themselves do not pose a hazard to the employee.
2. Employees are provided with information about the use of respirators and acknowledged that they understand the information by completing the *Acknowledgement of Voluntary Use of Respirators (*see below), which must be maintained by the LSR or provided to HSE for documentation.

Employees are not required to complete a medical screening/evaluation or a fit test for voluntary use of a N95 dust mask.

Voluntary use of elastomeric tight-fitting respirators (other than N95/P100 dust masks)

For voluntary use of elastomeric respirators (e.g. air purifying half/full face) other than N95 dust masks, the following requirements must be met:

1. A risk assessment conducted by the PI, LSR and/or HSE to ensure that the respirators themselves do not pose a hazard to the employee.
2. Complete Respiratory Protection Training.
3. Complete the *Acknowledgement of Voluntary Use of Respirators* form, which must be maintained by the LSR or provided to HSE for documentation.
4. Complete a medical evaluation to ensure the employee is medically qualified to wear respirators. The medical evaluation requirements are the same as in Section 11.
5. Ensure that the respirators are properly cleaned, stored, and maintained.

Because the elastomeric tight-fitting respirators place a much greater physiological burden on employees, HSE believes that by requiring employees to complete the above requirements for voluntary use, it will ensure that the respirator is used properly and does not create a hazard to the users. In addition, all respirators and respirator cartridges must be NIOSH/EU approved.

Acknowledgement of Voluntary Use of Respirators

As an employee, you may choose to wear a respirator on a voluntary basis even when there is no exposure risk or when the exposure level is below the Occupational Exposure Limits (OELs). In accordance with King Abdullah University of Science and Technology Respiratory Protection Program, this information is provided to you if you choose to wear a respirator VOLUNTARILY.

Please read the following section, complete the form at the bottom, and return it to the RST Industrial Hygienist or HSE Department.

Information for Employees Using Respirators When Not Required Under KAUST Respiratory Protection Program

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is sometimes encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for employees. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the employees. Employees may wear respirators even if the amount of hazardous substance does not exceed the OELs. Although respirators are available for voluntary use, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

1) Read and follow all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
2) Choose respirators certified for use to protect against the contaminant of concern. The U.S. National Institute for Occupational Safety and Health (NIOSH) certifies respirators or the European Union EN Standards (EU). A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3) Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles (e.g. N95 dust mask) will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4) Keep track of your respirator so you do not mistakenly use someone else's.

Please remember the limitations of the respirator you have chosen to wear voluntarily. The HSE Team (HSE@kaust.edu.sa) is available should you have any questions/concerns about the respirator voluntary program.

Name: _____ Date: _____

Signature: _____

Department: _____