Bayer's Approach to WPS Revisions

Respirator Selection and Compliance

2018 TPSA Conference

February 7, 2018 / Jennifer M. Thomasen

Agenda

- Internal WPS Training
  - Respirator Program and Training
- External
  - Respirator Selection Guide
  - Label Language

Internal Efforts

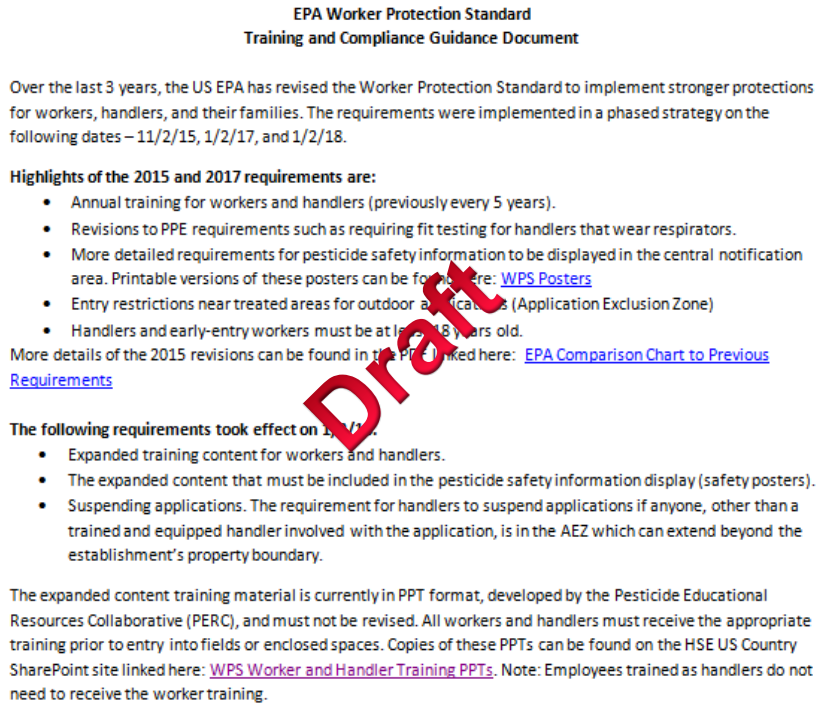
WPS and Respirator Training

Bayer Internal Effort for WPS Compliance

- Collaborative effort across various functions
  - Human Safety, NA
  - Corporate Health and Safety group
  - Field Operations/Product Development
- Developing training and selection information
- Provide more efficient training modules

Bayer Internal WPS Guidance Document

- Defines who needs to comply
- Guidance document highlights key changes and how to comply
- Links to training and compliance documents



EPA Worker Protection Standard
Training and Compliance Guidance Document

Over the last 3 years, the US EPA has revised the Worker Protection Standard to implement stronger protections for workers, handlers, and their families. The requirements were implemented in a phased strategy on the following dates – 11/2/15, 1/2/17, and 1/2/18.

Highlights of the 2015 and 2017 requirements are:

- Annual training for workers and handlers (previously every 5 years).
- Revisions to PPE requirements such as requiring fit testing for handlers that wear respirators.
- More detailed requirements for pesticide safety information to be displayed in the central notification area. Printable versions of these posters can be fo[illegible]re: WPS Posters
- Entry restrictions near treated areas for outdoor a[illegible]ications (Application Exclusion Zone)
- Handlers and early-entry workers must be at le[illegible]18 years old.

More details of the 2015 revisions can be found in th[illegible] linked here: EPA Comparison Chart to Previous Requirements

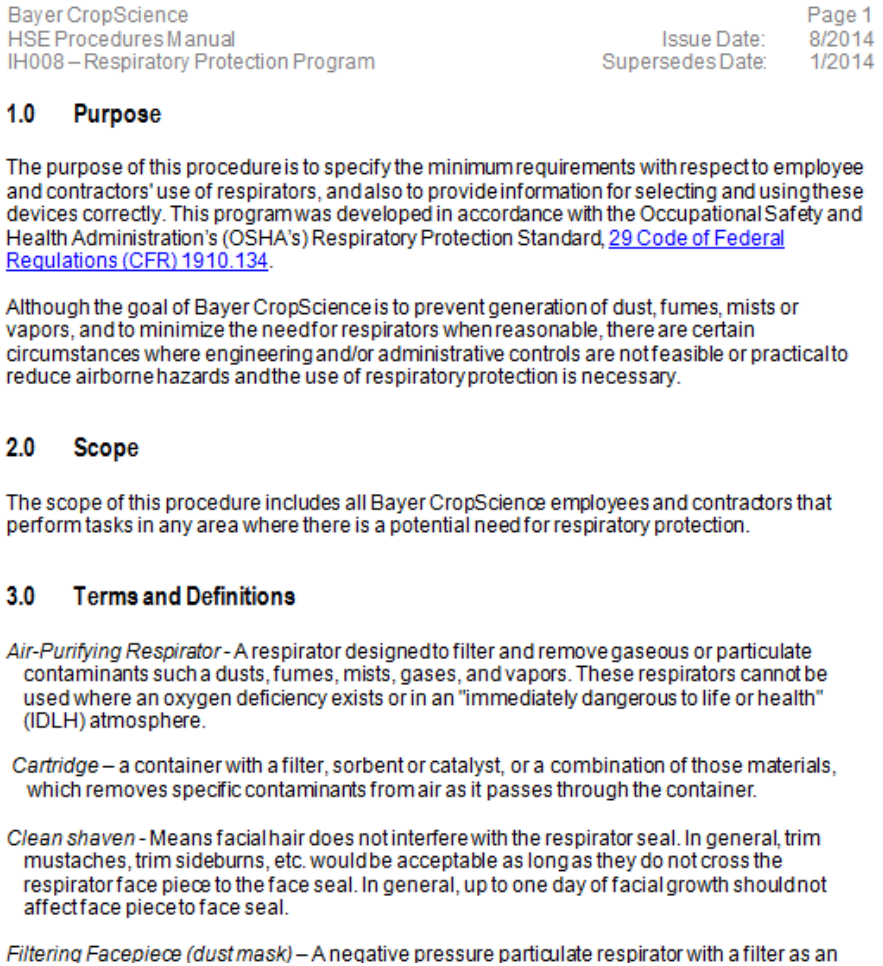
The following requirements took effect on 1/[illegible]:

- Expanded training content for workers and handlers.
- The expanded content that must be included in the pesticide safety information display (safety posters).
- Suspending applications. The requirement for handlers to suspend applications if anyone, other than a trained and equipped handler involved with the application, is in the AEZ which can extend beyond the establishment's property boundary.

The expanded content training material is currently in PPT format, developed by the Pesticide Educational Resources Collaborative (PERC), and must not be revised. All workers and handlers must receive the appropriate training prior to entry into fields or enclosed spaces. Copies of these PPTs can be found on the HSE US Country SharePoint site linked here: WPS Worker and Handler Training PPTs. Note: Employees trained as handlers do not need to receive the worker training.

Bayer Internal Respiratory Protection Program Procedures

- Bayer Respiratory Protection Program in place for quite some time
- Ensure language is consistent
- OSHA respirator program requirements
  - Medical
  - Fit Testing
  - Training
    - Selection, use, maintenance, etc.



Bayer CropScience
HSE Procedures Manual
IH008 – Respiratory Protection Program

Page 1
Issue Date: 8/2014
Supersedes Date: 1/2014

1.0 Purpose

The purpose of this procedure is to specify the minimum requirements with respect to employee and contractors' use of respirators, and also to provide information for selecting and using these devices correctly. This program was developed in accordance with the Occupational Safety and Health Administration's (OSHA's) Respiratory Protection Standard, 29 Code of Federal Regulations (CFR) 1910.134.

Although the goal of Bayer CropScience is to prevent generation of dust, fumes, mists or vapors, and to minimize the need for respirators when reasonable, there are certain circumstances where engineering and/or administrative controls are not feasible or practical to reduce airborne hazards and the use of respiratory protection is necessary.

2.0 Scope

The scope of this procedure includes all Bayer CropScience employees and contractors that perform tasks in any area where there is a potential need for respiratory protection.

3.0 Terms and Definitions

Air-Purifying Respirator - A respirator designed to filter and remove gaseous or particulate contaminants such a dusts, fumes, mists, gases, and vapors. These respirators cannot be used where an oxygen deficiency exists or in an "immediately dangerous to life or health" (IDLH) atmosphere.

Cartridge – a container with a filter, sorbent or catalyst, or a combination of those materials, which removes specific contaminants from air as it passes through the container.

Clean shaven - Means facial hair does not interfere with the respirator seal. In general, trim mustaches, trim sideburns, etc. would be acceptable as long as they do not cross the respirator face piece to the face seal. In general, up to one day of facial growth should not affect face piece to face seal.

Filtering Facepiece (dust mask) – A negative pressure particulate respirator with a filter as an

Internal Training

Bayer Employee Respiratory Protection Training

Respirator Training Objectives

- Respirator Standard Awareness - What is it?
- Reasons for Standard
- Provide knowledge so you can practice effective respirator safety and understand your respirator's capabilities and limitations

Safety First

Tasks Requiring Respirators at BCS

General Site Operations

•Spray painting

•Welding or cutting on stainless steel, galvanized steel, or painted surfaces, to protect against metal fumes

•Pesticide maintenance sprays (when label indicates to wear respirator.

•Transferring of waste solvents from 5-gallon cans to 55 gallon drums

Scientific / Biological Tasks

•Weighing and handling of chemicals, except for in functioning fume hoods: (if an experimental formulation or when label indicates to wear respirator)

•Spraying of chemicals (when label indicates to wear respirator or an experimental compound)

•Cleaning equipment (that has been contaminated with chemicals requiring the use of a respirator)

•Protection against inhalation of organic vapors and particulates

Respiratory Protection Program

- Program elements in policy
- Sets forth inspection, maintenance, testing, monitoring and other basic conditions for respirator use
- Includes annual training requirements

Types of Respirators

- Air Purifying: Filter harmful contaminants from ambient air (focus of this training)

- Atmosphere Supplying: Deliver a supply of breathing air from a tank or a remote source

Respirator Assigned Protection Factors (APFs)

APF x PEL = Maximum Use Concentration (MUC)

Type	Protection Factor
Quarter mask air purifying	5
Half Face Air Purifying	10
Powered Air Purifying Loose-Fitting Hood	25 (unless evidence provided that a PF of 1,000 can be achieved)
Full Face Air Purifying	50 (10 with a qualitative fit test)
Self Contained Breathing Apparatus – Positive Pressure	10,000

BCS-Approved Respirator Models

RTP Area Sites – HSE
Procedure: GS 6.0
Respiratory Protection

Effective Date: 8/16/1
Supersedes: 8/16/
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Attachment A: Approved Respirators

Respirator Type	Manufacturer And Model Number	*Assigned Protection Factor	Protection Provided Comments*
Negative Pressure Respirators	Survivair:2000, 3000	10	Pesticides, organic vapors, dusts, mists, and fumes
	Moldex Disposable: 8000 Series	10	Pesticides, organic vapors, dusts, mists, and fumes
	3M: 6000 Series	10	Pesticides, organic vapors, dusts, mists, and fumes
	3M: 7500 Series	10	Pesticides, organic vapors, dusts, mists, and fumes
	MSA: Comfo Elite	10	Pesticides, organic vapors, dusts, mists, and fumes
	North/Honeywell: 5500 Series	10	Pesticides, organic vapors, dusts, mists, and fumes
	North/Honeywell: 7700 Series	10	Pesticides, organic vapors, dusts, mists, and fumes
	3M 6800 Series (full face)	50	Pesticides, organic vapors, dusts, mists, and fumes
	3M Ultimate FX (full face)	50	Pesticides, organic vapors, dusts, mists, and fumes
	North/ Honeywell 7600 Series (full face)	50	Pesticides, organic vapors, dusts, mists, and fumes
	Survivair 7700 Series (full face)	50	Pesticides, organic vapors, dusts, mists, and fumes
PAPR	KASCO Model K80S T8	25	Pesticides, organic vapors, dusts, mists, and fumes
	3M Breathe Easy 12	25	Pesticides, organic vapors, dusts, mists and fumes
Filtering Facepiece	3M: 8710	Nuisance Dust Only	Dusts and particulates
	3M: 8210 and 8110S	Nuisance Dust Only	Dusts and particulates
	Moldex 2300N95	Nuisance Dust Only	Dusts and particulates

NOTE: Other respirators may be used on a case-by-case basis and upon approval by the QHSE Rest of Region Manager.

Criteria For Using Air Purifying Respirators (APRs)

- There is at least 19.5% oxygen
- The protection factor of the APR is sufficient for the concentration of the contaminant
- The APR and cartridge are approved for protection against the contaminant
- The contaminant has good warning properties
- Atmosphere **is not IDLH** –
  Immediately Dangerous to Life or Health

You Must Use the Correct Filtering Cartridge/Canister

- Cartridges are color coded and marked to indicate authorized contaminants
- Cartridges should be changed when end of service life is reached (maximum of 8 hours at BCS) or at breakthrough

Black	Organic Vapors
Yellow	Organic Vapors/Acid Gases
White	Acid Gases
Green	Ammonia or methylamine
Purple	Particulates (dusts, fumes, mists)
Olive	Multi-contaminant

Fit, Use & Maintenance

- Good fit ⇒ good seal ⇒ protection
- We conduct both qualitative fit tests at BCS using isoamyl acetate (banana oil) or Bitrex and quantitative fit tests
- Protection factor = 10 for tight fitting respirators with qualitative fit tests
- Respirator and cartridges/filters must be appropriate for type, nature and magnitude of hazard
- The best fit can't make up for poor use and care

Filter/Cartridge Change Out

- Finite lifespan; change out:
  - every 8 hr. shift or useful life (if shorter); if 'useful life' is used, a use log must be prepared, **8 hr. maximum use**
  - Change out if breathing resistance increases
  - Change out if breakthrough (odor/taste) occurs
  - Record usage on Respirator Use Log

Inspection, Use & Seal Checks

- YOU must inspect before & after each use-
- Check the face-piece, straps, valves, cartridge/filter, pliability of elastomeric parts
- Do a user seal check each time it's put on – both negative and positive checks

External Efforts

Respirator Label Language, Respirator and WPS Training

External Efforts

Mixer/loaders supporting aerial applications and chemigation applications must wear also (except when using closed mixing/loading systems): Wear a minimum of a NIOSH approved particulate filtering face piece respirator with any N, R or P filter (TC-84A); OR an elastomeric NIOSH approved particulate respirator with any N, R or P filter (TC-84A); OR a NIOSH approved powered air purifying respirator with an HE filter (TC-21C).

- Respirator Label Language
  - Updating labels with outdated language
  - Ensure new label language on any new labels submitted to EPA
- Develop respirator selection guide to send out with products
- Communicate Internal efforts to our customers
  - Inform customers of resources available
    - PERC inventory, NPSEC
  - Assist with WPS compliance questions when needed
    - Bayer Tech Services group

NPSEC National Pesticide Safety Education Center

PERC Pesticide Educational Resources Collaborative

Thank you!

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Forward-Looking Statements

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