

# **Personal Protective Equipment Pocket Guide**

Published and Distributed by  
**GENIUM PUBLISHING CORPORATION**  
One Genium Plaza  
Schenectady, NY 12304-4690 USA  
(518) 377-8854

Author  
John V. Conforti

Editor  
Christine E. Gorman

Photos  
Courtesy of MSA

Copyright © 1994, 1995  
by Genium Publishing Corporation  
All Rights Reserved  
ISBN 0-931690-73-0  
Printed in the United States of America

NOTICE: Every effort has been made to ensure the accuracy and completeness of the information in this guide. However, Genium Publishing Corporation, the author, and the editor assume no liability for any loss or damage resulting from inaccuracy or incompleteness. All persons named are fictional. Any similarity to real persons is coincidental.

***The Personal Protective Equipment  
Pocket Guide* is available with your  
organization's name imprinted on the  
cover.**

## Table of Contents

<b>Introduction</b>	3
<b>I. General Requirements for PPE (CFR 1910.132)</b>	5
<b>II. Eye and Face Protection</b>	11
Typical Workplace Hazards	11
Selection	14
Use 19	
Maintenance	20
Eye and Face Protection Safety Tips	20
<b>III. Head Protection</b>	22
Typical Workplace Hazards	22
Selection	23
Design and Function	26
Accessories	28
Use 28	
Maintenance	29
Head Protection Safety Tips	29
<b>IV. Hand Protection</b>	31
Typical Workplace Hazards	32
Selection	34
Use and Maintenance	39
Hand Protection Safety Tips	40
<b>V. Foot Protection</b>	42
Typical Workplace Hazards	42
Selection	45
Use and Maintenance	46
<b>Summary</b>	47
<b>Glossary</b>	49
<b>PPE Safety Checklists</b>	55

## **Introduction**

Hammond Eggsly here. Last in a line of famous, or should I say infamous, Eggslys (about a dozen of us). I'm also curator of the Eggsly Museum for the Terribly Misinformed; a museum filled, I'm afraid, with the failed exploits of my dearly departed relatives, all victims of preventable on-the-job accidents. My family has built a long and lasting reputation for falling victim to circumstances that could have been easily avoided with the use of proper personal protective equipment (PPE).



That's why I'm here; to tell you about some important changes and additions that have been made to the laws that govern the requirements for personal protective equipment, such as hard hats, gloves, etc. - gear designed to protect your health and safety on the job.

## **I. General Requirements for PPE (CFR 1910.132)**

The original “general requirements” for PPE go way back to 1971, and the data they were based on dates back to the 1960’s. The requirements were simple and straightforward:

### **1. Application**

Personal protective equipment (PPE) must be provided, used, and maintained in a sanitary and reliable condition, as needed, to protect the health and safety of the employee from workplace hazards.

### **2. Employee-owned Equipment**

When an employee provides their own PPE, the employer must ensure its adequacy, including proper maintenance and sanitation.

### **3. Design**

All PPE must be of safe design and construction to reduce the possibility of injury specific to the job to be performed.

Not a bad “first try”. In fact, there were no revisions to this part of the law, but because many of the PPE performance requirements referenced in the original law were outdated and contained certain gaps, in 1987 OSHA recommended that revisions be made.

What really caught the attention of law makers was the fact that injuries were occurring to people who *were wearing* PPE, as well as to those who were not. In addition, they found that PPE was either not being worn, was not properly worn or maintained, or simply didn’t fully protect the workers. Not good!

OSHA made important changes to the original law, and this new law, which details the general requirements for PPE, effective July 1994, includes three new requirements:

## **II. Eye and Face Protection**

Have you ever been sawing a piece of wood or spraying a cleaning agent, gotten a little of it in your eye, and thought, “Gee, I wish I had worn a pair of goggles?” Well, move that scenario into an industrial work environment and you’d probably be saying something a lot more colorful than “Gee!”

According to the government, there are approximately 2.8 million workers who have jobs that put them at risk for eye injuries. That’s 5.6 million eyeballs! About 300,000 eye injuries occur each year, many resulting in permanent loss of sight in one or both eyes.

If you don’t want to be one of these casualties, then you’d better get the right “peeper protectors” for the job and know how to use them. Your employer is responsible for performing the hazard assessment and PPE selection, but hey, they’re your eyeballs, take a personal interest in them! That reminds me of poor Aunt Scrambellina Eggsly, but first, let’s look at some typical workplace hazards that would require eye and face protection.

### **Typical Workplace Hazards**

#### **Impact**

Anytime you’ve got machines in motion coming in contact with materials, you’re going to have UFO’s. No, not flying saucers - Ubiquitous Frangible Objects. Okay, I made the words up, but what I’m talking about are pieces of material, like sand, dirt chips, particles, etc., that get “thrown off” as the result of work such as grinding, sanding, sawing, drilling, chiseling, etc., or even nailing or stapling.

A piece of sand or a chip of wood may not seem like much, but when it’s tossed by a machine spinning at 10,000 rpm’s, it becomes a pretty potent missile. Likewise, when metal particles are spinning through the air like tiny

### III. Head Protection

A poke in the eye or a hammer on the head. What's worse? Good question! By now you know enough to keep those pesky UFO's from poking your eyes. And as far as the hammer goes, well, there's always something to be learned from the tragic tale of Grandfather Eggsly, but that's another story.

A government study on disabilities suggests that there are over 70,000 head/face injuries each year. While it's true that head protection couldn't have prevented all of them, I bet there are plenty of injured workers who wish they'd been better protected at the time of their accident.

#### Typical Workplace Hazards

##### Falling Objects (Impact/Penetration)

Time out for a reality check . . . You know those Saturday morning cartoons where one character tosses a 200 pound anvil off of a 30 story building onto the head of the hapless character below - they're not real. In the cartoon, the victim always manages to get up to seek some type of revenge. In the real world, if you think wearing a hard hat is going to allow you to walk away from that kind of impact, you've been watching too many cartoons. Remember, protective headwear is designed to *reduce* the physical effects of the impact or penetration from a falling object. It won't make you invincible.

Although it won't stop an anvil from cracking your skull like an . . . well, you know . . . head protection can prevent severe injury from "small" falling objects, such as pieces of wood, small tools, bolts, rivets, etc. Head protection also helps guard against sharp objects such as nails, chisels, rebar, etc., that not only impact your head but can also gouge or penetrate your skull. Of course, it would be best if everyone was careful not to drop these things on their fellow workers below, but that's

## **IV. Hand Protection**

Have you ever made the mistake of slicing, dicing, or slamming your finger while working on something? Well, here's another statistic from Uncle Sam - during a study done in 1987, it is estimated that there were 320,000 on-the-job injuries involving hands and fingers in just one year. That's a lot of mistakes.

My brother Stubby used to say that he could count the number of mistakes he'd made on one hand. Of course, he only had three fingers on that hand, but that's another story . . .

Protective handwear could not have prevented all 320,000 injuries. There's not much you can do when you smash your thumb with a hammer. And no handwear is going to save you if your foolish enough to disconnect or bypass equipment guards or barriers designed to keep your fingers and hands away from potential hazards. You know, hazards like machines that saw, spin, cut, or punch. These machines are all made with safeguards. Remove or defeat them - and you're asking for trouble.

But on the other hand (ha, ha), there are plenty of times when protective handwear could mean the difference between a day at work or a day at rehab. Unfortunately, another study determined that 70% of workers suffering from hand injuries weren't wearing any gloves at the time of their accident. That's almost two-thirds! But do you know what's even scarier? This means that the other 30% of workers with hand injuries were wearing protective hand equipment, but it was either inadequate, damaged or defective, or ineffective against the type of hazard present.

The answer to this problem is all too familiar by now - let's say it together - "hazard assessment and proper selection of PPE based on those hazards." Very good!

## V. Foot Protection

Broken toes, sprained ankles, painful bunions, stepping on broken glass - not exactly my idea of fun. How about you? There's nothing like a painful or serious foot injury to make you realize the importance of having two good feet. According to the government, approximately 110,000 workers make that same painful discovery each year.

### Typical Workplace Hazards

#### Punctures

Remember those objects we mentioned that can wind up in your fingers? Well, they can also fall on the floor and wind up in your feet. Workers in construction and metal reprocessing industries are especially susceptible to this kind of foot injury.

This section brings us to the last stop on our museum tour and the tale of Cousin Rod N. Eggsly, who was not-so-affectionately known as "Cheapskate." Boy, was he tight with a buck! His children used to say that getting their weekly allowance out of him was like getting the yolk out of a hard-boiled . . . you know.

Cheapskate worked for a company that manufactured steel pipes. All day long steel was ground and cut, which always left the plant floor covered with razor-sharp scraps. Protective footwear was a *must* in that plant, and each worker was given an allowance to purchase replacement footwear every year.

Well, Cheapskate never used that money to buy protective footwear. He squirreled it away, and every year when his co-workers arrived wearing their new work boots, he would throw a thick coat of polish on the same worn out boots he'd used for *three* years. There was so much steel imbedded in the soles that he took them off each night with a magnet!

## **Summary**

That's the end of the tour and the lesson. Feel free to visit again any time you need a reminder about the importance of PPE.

The most important lesson to be learned is that safety is the name of the game, and it is obtained by using the knowledge gained through a comprehensive hazard assessment; using the proper PPE for the job based on the hazard assessment; and wearing the PPE correctly, knowing its limits, and how to maintain it. All this knowledge and skill comes from the training provided by your employer.

This lesson also applies to the protective equipment that is not covered in this guide (respirators, shin guards, safety belts, hearing protection, etc.). No matter what is needed, as long as you're familiar with OSHA's general requirements for PPE, you won't end up like my great-great grandfather - he was a tough Eggsly to crack - but that's another story. Right now, I have to get back to the museum. I detected a strong odor of meatloaf coming from Grandpa Eggsly's exhibit. But first . . .

## **A Final Dozen Eggsly Safety Tips**

- PPE is not to be used in lieu of sound engineering and manufacturing practices.
- PPE should never be used without proper training in its use and limitations.
- PPE must always be maintained in a clean, sanitary, serviceable condition.
- PPE must never be used if shown upon inspection to be defective or damaged.
- PPE should meet or exceed applicable recognized performance standards, such as ANSI, NIOSH/MSHA, etc.
- PPE must never be selected without first employing a comprehensive hazard

## **Glossary**

**Acute Health Effect.** An adverse effect on a human or animal body, with symptoms developing rapidly.

**ANSI.** American National Standards Institute. A privately funded organization that identifies industrial/public national consensus and coordinates their development. Many ANSI standards relate to safe design/performance of equipment and safe practices or procedures.

**Astigmatism.** A condition in a lens of a protector in which there is a difference in refractive power in one meridian from that in another meridian.

**Blue-light Transmittance.** Transmittance of optical radiation weighted by its ability to cause photochemical damage to the retina.

**Brim.** An integral part of the shell extending outward over the entire circumference.

**Bump Cap.** Headwear that offers very limited protection against low or fixed objects.

**Chain Mail Gloves.** Gloves made of interlocking metal design to protect against sharp objects.

**Chin Protector.** That portion of a device that offers protection to a wearer's chin, or lower face and neck.

**Chin Strap.** An adjustable strap that fits under the chin to secure the helmet to the head.

**Chronic Health Effect.** An adverse effect on a human or animal body with symptoms that develop slowly over a long period of time and persist, or that recur frequently.

**Class A Helmet.** Helmet designed to reduce the impact of falling objects and to reduce the danger of contact with exposed low voltage conductors (proof-tested at 2,200 volts).

**Class B Helmet.** Helmet designed to reduce