



## THE COLOR OF SAFETY

David W. Smith, Extension Safety Program

Color plays a vital role in our lives, affecting our moods, choices, attitudes, and behaviors. Marketing and advertising researchers have studied the subconscious effects on humans exposed to different colors, including what colors and combination of colors attract attention, increase our retention, and influence our choices. Have you ever stopped to realize how a color of a room makes you feel, or why you tend to buy more of one color shirt than another?

Though there is no “right” choice of color. Color preference tends to suggest consistent attributes that may reveal a lot about individual values and personalities. For example, color consultants contend that blue suggests security, authority, faithfulness, and dignity; green suggests health, freedom, and tranquility; and red suggests excitement, strength, and aggressiveness. Have you ever noticed the color of the tie the president is wearing?

Medical professionals have found color to influence a person’s mood and physical response. Pure red, for example, is thought to excite the nervous system, increasing blood pressure, respiratory rate, and heartbeat. Conversely, blue is thought to decrease blood pressure, respiratory rate, and heartbeat. The next time you’re in a doctor’s office or hospital, observe the colors of walls, staff uniforms, and medical equipment. How did you respond to those colors?

One should be careful about making broad generalizations about color preference and meaning from culture to culture, because similar colors have different meanings from one country to the next. For example, in China, red is a color for joyous and festive occasions; but, in Japan, red signifies anger and danger. While blue for the Cherokee Indian signifies defeat, for the Egyptian, it signifies virtue and truth. In Japan, blue is the color for villains.

Within a culture or country, color has the ability to speak all languages when applied consistently. In the United States, color is used extensively in almost every industry and public place to accommodate the various backgrounds, national origins, and languages of its people. The most obvious application of color standards is seen in the transportation, manufacturing, and public works industries to ensure order, consistency, and personal safety.

### TRANSPORTATION

Traffic signs, turn signals, highway markers, and construction markers are designed according to specific color codes. With few exceptions, these color codes are consistent across the United States; this allows drivers in Texas to drive safely in New York. Table 1 gives the color and corresponding meaning for standard traffic signs. Orange, for example, is used as a background color for construction and maintenance signs. Experienced drivers recognize that any time they see orange markers, they should slow down and use caution. On the other hand, when we’re looking for a state park or recreation area, we automatically look for a brown sign.

Table 1. Standard Traffic Sign Colors and Their Meaning

Color	Meaning
Red	Exclusively for STOP and YIELD signs, multi-way supplemental plates, DO NOT ENTER and WRONG WAY signs, for legend or symbols on certain regulatory signs, and as part of Interstate and certain state route markers.
Black	Used as background for ONE WAY, night speed limit, and inspection station signs, and as message color on signs with white, yellow, or orange backgrounds.
White	Used as background for route markers, guide signs, and certain regulatory signs, and as message color on signs with brown, green, blue, black, and red backgrounds.
Orange	Used as background color for construction and maintenance signs.
Yellow	Used as background color for warning signs (except construction and maintenance signs), and school signs.
Brown	Used as background color for guide and information signs related to points of recreation or cultural interest.
Green	Used as background color for guide signs and mileposts, and as a message color on permissive regulation and parking signs.
Blue	Used as background color for traveler services information signs, hospital signs, and the Civil Defense Evacuation Route Marker.
Fluorescent Yellow-Green	New—Now approved for pedestrian, bicycle, and school crossing warning signs.

## MANUFACTURING

Workplace safety is essential to the manufacturing industry. The days when a certain number of accidents and fatalities were considered an acceptable risk are long gone. Today, a company found negligent in workplace accidents faces substantial legal fines and penalties that affect company profits, increase insurance rates, and result in low employee moral and productivity. To help prevent workplace accidents and train new employees, standard color codes have been developed and adopted for manufacturing facilities and machinery that provide a uniform message to all workers. The American National Standards Institute (ANSI) has developed standards for color and meaning (ANSI Z545.1. Color Codes.) These standards have been adopted and promoted by the Occupational Safety and Health Administration (OSHA) to protect workers.

Color coding, listed in Table 2, is used to warn workers of hazardous machinery parts, signify the nature of hazards, and designate the location of safety equipment and first aid supplies. Orange, for example, warns workers of dangerous parts of machinery or energized equipment which may cut, crush, or otherwise injure the worker. Pulleys, gears, rollers, cutting devices, and exposed edges of equipment are often painted orange.

Red carries multiple designations but generally warns of extreme hazards. For example, red means “Danger” and “Stop.” Red is the standard color for emergency stop buttons, bars, and electrical equipment. Red also designates the location of fire protection equipment and apparatus such as fire alarm boxes, fire extinguishers, and industrial fire hydrants. In addition, red is the standard color for safety cans or other portable containers of flammable liquids.

The major benefit of standardizing color codes and their meanings is the consistency for workers that move from one job to another. Using color also eliminates the need for excessive written descriptions and signs that may actually create new safety problems.

Table 2. OSHA/ANSI Color Coding

Color	Message	Example Applications
<b>White/Black</b>	Designates traffic and housekeeping markings.	Boundaries of traffic isles, stairways, and directional signs.
<b>Orange</b>	Designates "warning" and dangerous parts of machinery or energized equipment which could cause injury.	Background color for WARNING safety signs, labels, and tags. Marking hazardous parts of machines with may cut, crush, or otherwise injure. Emphasizing hazards when enclosure doors are open or when gear, belt, or other guards around moving equipment are opened or removed, exposing unguarded hazards. Marking exposed edges of pulleys, gears, rollers, cutting devices, power jaws, etc.
<b>Blue</b>	Warning against starting or moving equipment under repairs.	Ladders, scaffolding, electrical controls, elevator starting controls, and other machinery.
<b>Red</b>	Designates "danger," "stop" and location of fire protection equipment and apparatus.	Emergency stop buttons, bars, and electrical switches. Safety cans or other portable containers of flammable liquids. Fire alarm boxes, fire extinguishers, fire hydrants.
<b>Purple</b>	Designates radiation hazards.	
<b>Green</b>	Designates "safety" and location of first aid equipment.	Background color for general safety signs including gas masks, first aid kits, stretchers, safety deluge showers, safety bulletin boards, and emergency exit routes.
<b>Yellow</b>	Designates "caution" for marking physical hazards such as: striking against, stumbling, falling, tripping, and "caught in between."	Background color for CAUTION safety signs, labels, and tags. Low beams, conveyors, doorway projections, and hand rails. Storage cabinets for flammable materials. For containers of flammable or combustible materials. Containers for corrosives, or unstable materials.

**PUBLIC WORKS**

Have you ever noticed the colored flags sticking out of the ground along the highway and wondered what they're for? The American Public Works Association (APWA) has developed uniform color codes to protect public and private excavators from accidental contact and damage to underground utilities. Utility companies and those responsible for locating and marking these underground utilities must use the appropriate marker flags or paint colors for the specific utility. This serves as notification to construction companies, builders, irrigation installers, and others of the location of electric, gas, and water lines so that precautions can be taken to prevent damage to the utility and to protect workers from associated hazards.

Table 3. APWA Color Code for Underground Utilities

Color	Message
White	Proposed excavation.
Pink	Temporary survey markings
Red	Electric power lines, cables, conduit, and lighting cables
Yellow	Gas, oil, steam, petroleum, or gaseous material
Orange	Communication, alarm or signal lines, cables, or conduit
Blue	Potable water
Purple	Reclaimed water, irrigation, and slurry lines
Green	Sewers and drain lines

Color coding in the transportation, manufacturing, and public works industries continues to prevent unnecessary accidents, prevent property damage, and save lives. Can you think of other applications where color coding is used to promote safety?