Color & Paint in Environments for the Aging

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Color & Paint in Environments for the Aging

Course Number EL201

Thursday, June 21, 2018

Learning Units 1.0 LU, HSW, GBCI, RIBA

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Speaker List

Linda Cipriano

Architectural & Design Rep

Benjamin Moore & Co.

Learning Objectives

At the end of this program, participants will be able to:

- Recognize how health problems alter or interfere with color perception.

- Differentiate between the type of common care environments for seniors.

- Discuss the growth of the aging population and common health problems they face, specifically as related to vision.

- Summarize how premium, low-VOC, or no-VOC paint can offer durability and safe application in environments for the aging.

Introduction

- Senior citizens are fastest growing segment of population

- Seniors will soon outnumber children under age 5

- By 2050, seniors will outnumber children 14 and under
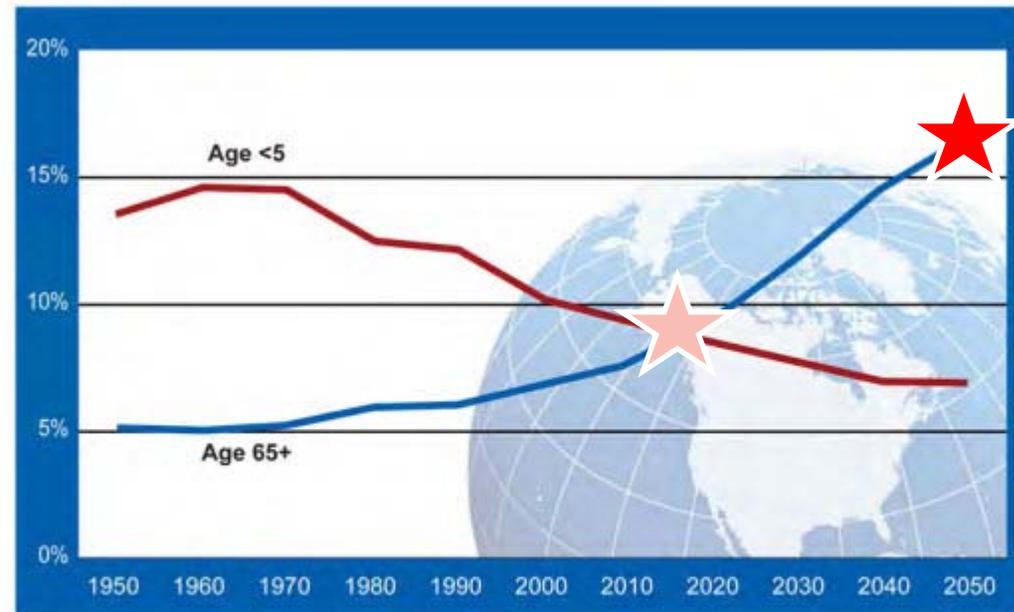
Source: United Nations. *World Population Prospects: The 2010 Revision.*
Available at: http://esa.un.org/unpd/wpp.

Courtesy: Global Health and Aging:
https://www.nia.nih.gov/research/publication/global-health-and-aging/humanitys-aging

Statistics

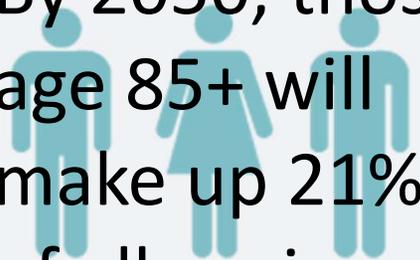Seventy-five million babies were born between 1946 and 1964 in the U.S.
70% more than the previous two decades.

What was this Group???

- By 2030 one in five in U.S. and Canada will be 65+

- By 2050, those age 85+ will make up 21% of all seniors

Aging and Vision

Larger proportion of the population with increased health problems. Aging and diseases can affect vision, specifically color perception.

How Eyes See Color

- Light transmission is one part of color perception.

- The second part of perceiving color is the eye's reception and the brain's interpretation of light.

- The health and age of the viewer's eyes have a huge impact on color perception.
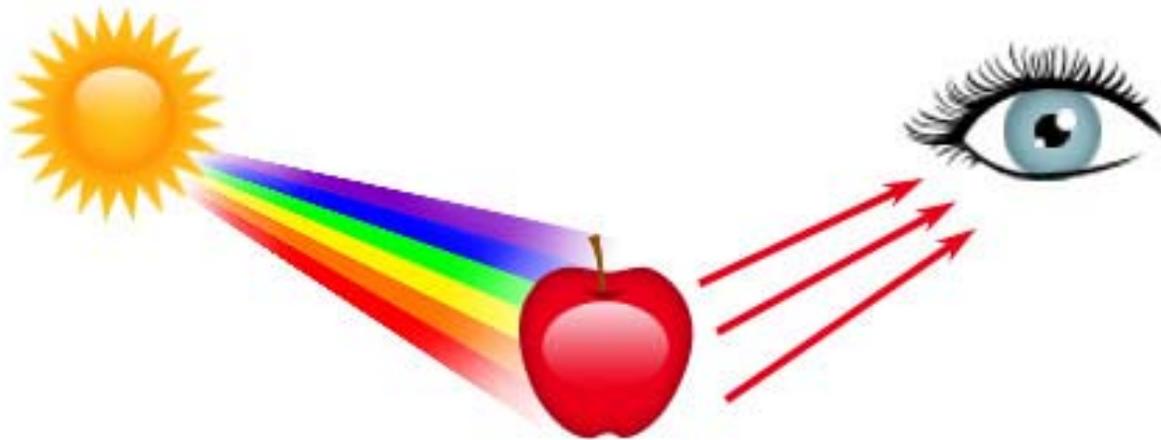
Eye Components

- Cornea lets in light

- Pupil regulates the amount of light retina receives

- Iris controls amount of light

- Lens focuses images on retina

- Retina lined with photo sensitive nerve cells

- Macula provides central vision

- Signals sent to brain through optic nerve

Cornea

Retina

Pupil

Iris   Lens   Macula   Optic nerve
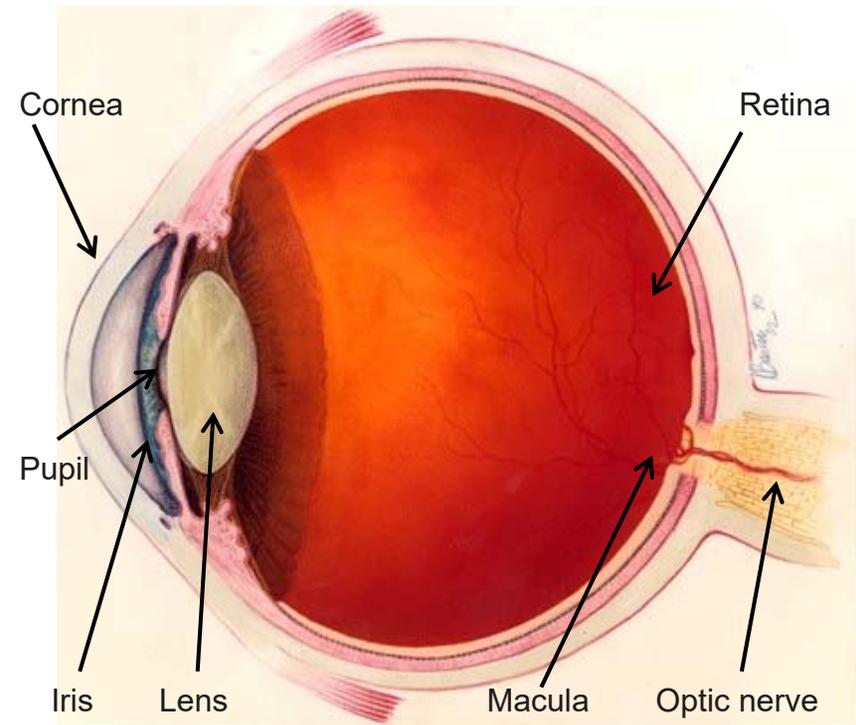
Courtesy: National Eye Institute, National Institutes of Health (NEI/NIH)

Age-Related Macular Degeneration

Age-related Macular Degeneration

Courtesy: National Eye Institute, National Institutes of Health (NEI/NIH)

Macula
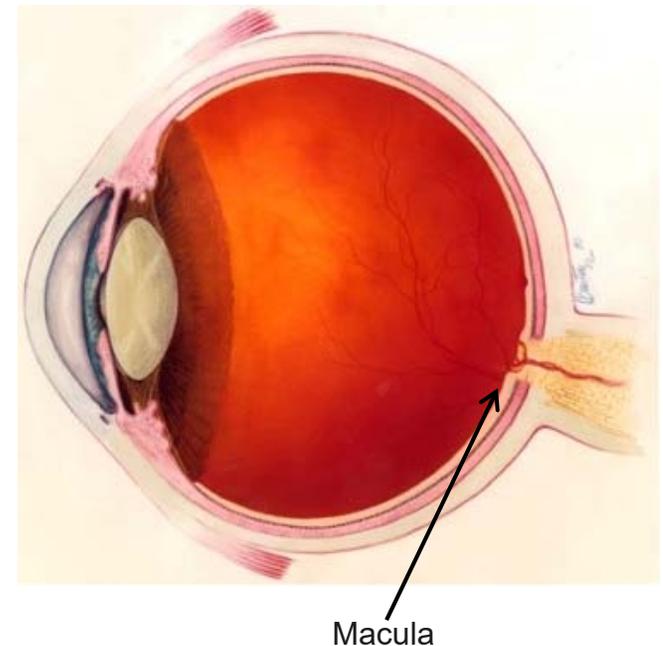
- Common cause of vision loss in those 50 and older
- Central vision is blurred, objects less bright
- Difficulty recognizing faces, driving, writing, and reading

Cataracts

Courtesy: National Eye Institute, National Institutes of Health (NEI/NIH)
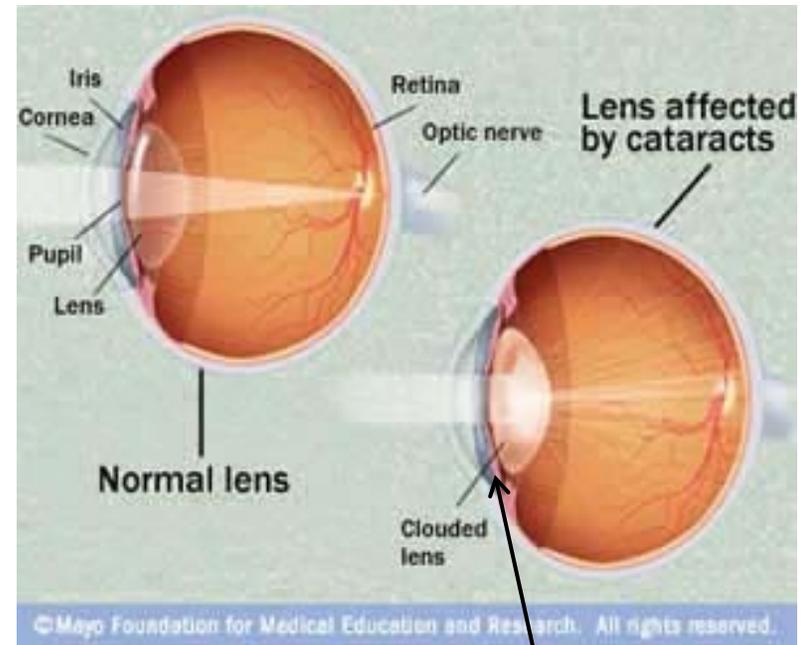
Lens affected by cataracts

- Clouding vision

- Yellowing lenses gives vision a yellowish or brownish tint.

Impaired Color Perception

Diabetic Retinopathy

Diabetic Retinopathy

Courtesy: National Eye Institute, National Institutes of Health (NEI/NIH)

Macula
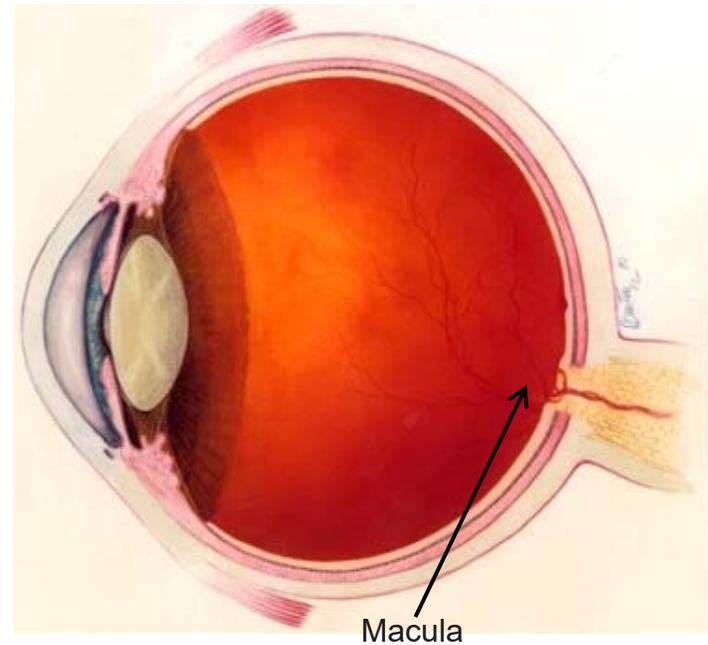
- Leading cause of blindness in the U.S.
- Blurred or blocked vision
- Surgery may reduce color vision
- Diabetes Type 1 and Type 2 are at risk

Glaucoma
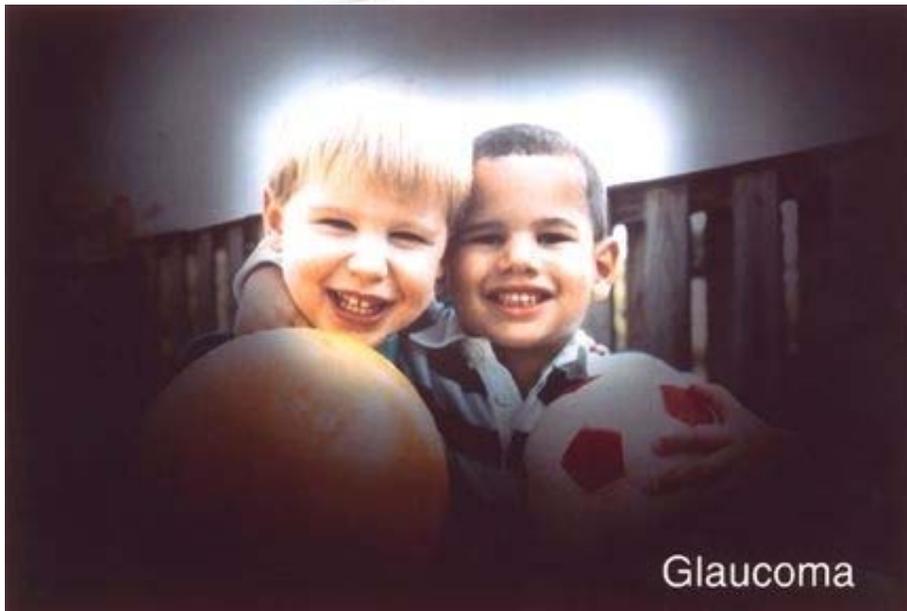
Glaucoma

Courtesy: National Eye Institute, National Institutes of Health (NEI/NIH)
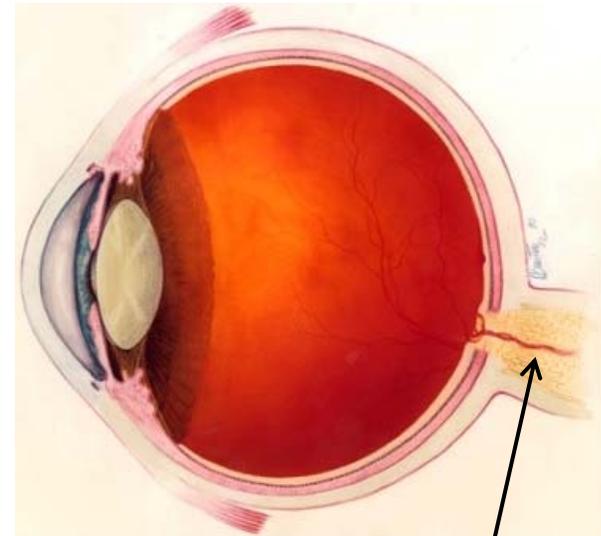
Optic Nerve

- Damage to optic nerve creates loss of peripheral vision
- "Tunnel vision"
- Early symptoms of Glaucoma - diminishing color vision.

Vision Changes in Alzheimer / Dementia

- Vision is dependent on eyes to collect visual information and the brain to interpret the information

- Changes occur even when eyes of Dementia sufferer are healthy
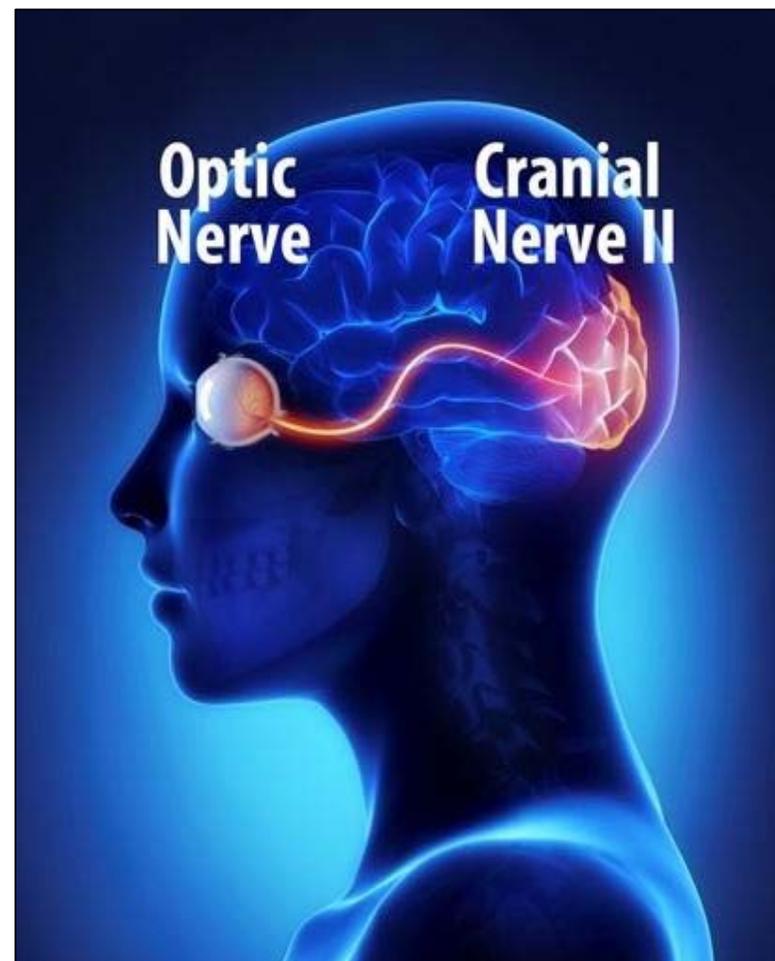
Alzheimer / Dementia

- Dementia is not one specific disease

- Decline in memory or thinking skills that affects everyday life

- Impairment in:
  - Communication
  - Memory
  - Focus and attention
  - Object recognition
  - Planning and reasoning
  - Visual perception
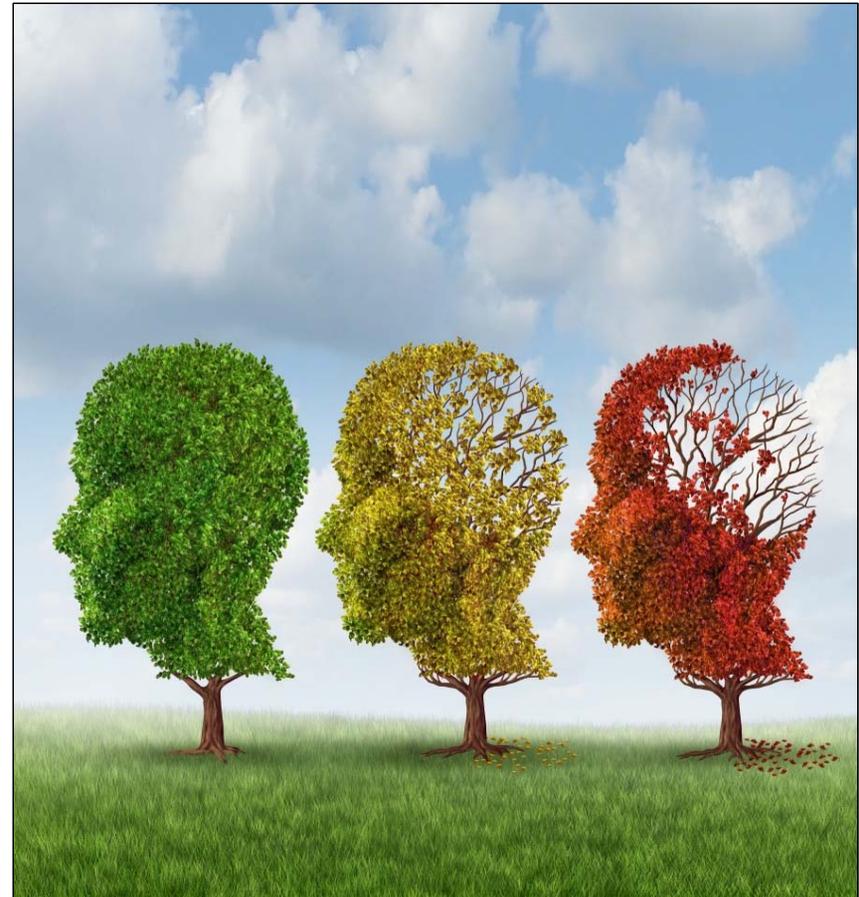
Dementia symptoms can be characterized by a slow decline of cognitive disorders .

Alzheimer's Disease in the U.S.

- Over 5 million Americans currently have this disease

- Up to 13.8 million will have it by 2050

- 1 in 9 Americans aged 65 and over have it

- At 65, risk doubles every five years

- One third over the age of 85 have the disease

Vision Changes in Alzheimer / Dementia

- Lose ability to judge depth

- Dark circles on floor look like holes, pools of water

- Complex patterns are confusing and distracting

- Bold stripes seem to move

- White plate on white table impossible to see

Courtesy: Victorian Government Health Information

Vision Changes in Alzheimer / Dementia

During the late afternoon vertical blinds can cast shadows the length of a room.

Courtesy: Victorian Government Health Information

Parkinson's Disease Dementia

- Parkinson's Disease
  - Can decrease sensitivity to color contrast

  - Can cause blue-yellow color blindness

  - 50% to 80% develop dementia

It initially affects movement: tremors, slow movement, and rigidity—but it can spread to other parts of the brain, so that dementia can become a symptom of the disease.

Examples of Blue-Yellow Color blindness

Control
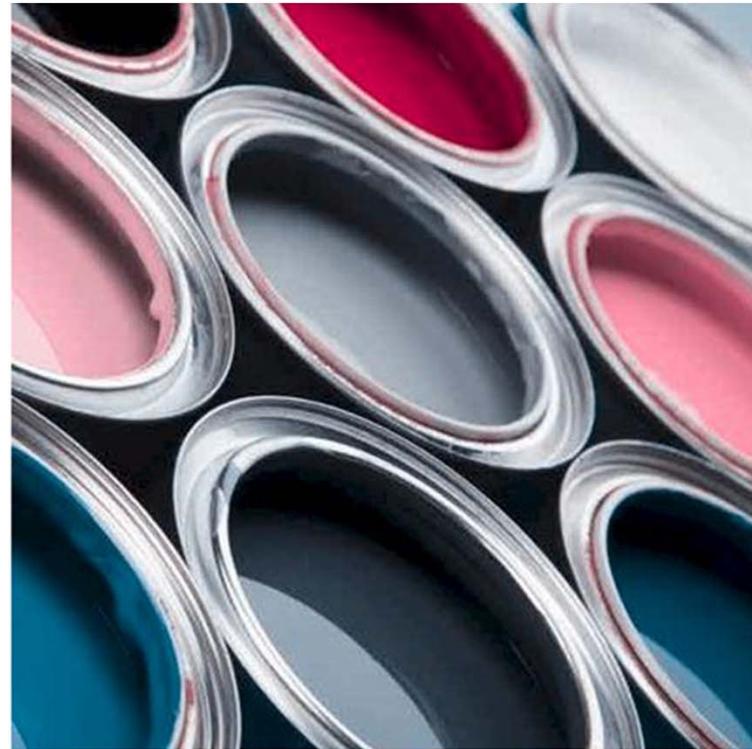
Simulation of Blue-Yellow Color blindness

People affected by blue-yellow color blindness confuse blue with green and yellow with violet.

Sheen and Aging Eyes

Shiny floors, reflective countertops, and glossy wall finishes can produce enough shine and glare to be almost blinding to the elderly.
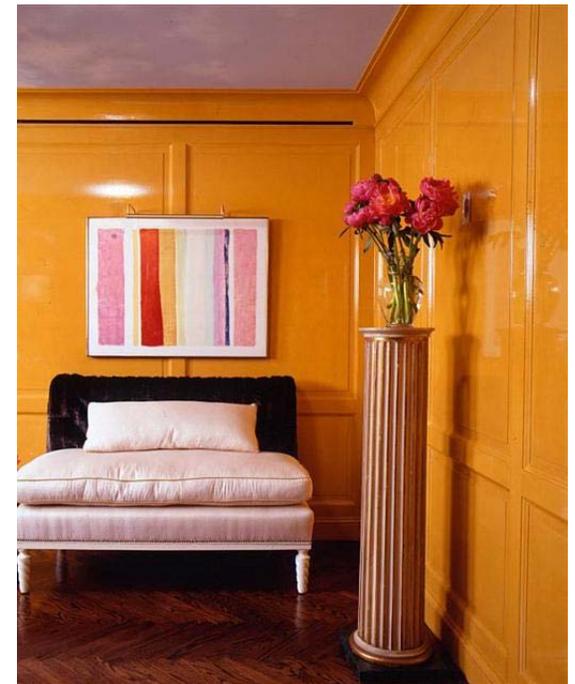
As we age, the pupil becomes smaller and less responsive to variations in light. Glare becomes less tolerable because the pupil is less able to adapt to the change in lighting.

Paint Sheen

Appearance and Durability

Flat	Eggshell	Satin	High-Gloss
Matte	Pearl	Semi-Gloss	

Low Sheen	High Sheen
Non-Reflective	Reflect more light
Diffuse light	Specular reflection
Hide surface defects	Accentuate surface defects
Less Durable/Burnishing	Durability / Washability

Goals for Aging

- Physical Health
- Fulfillment
- Belonging
- Quality of Life
- Independence
- Confidence

What can you do?
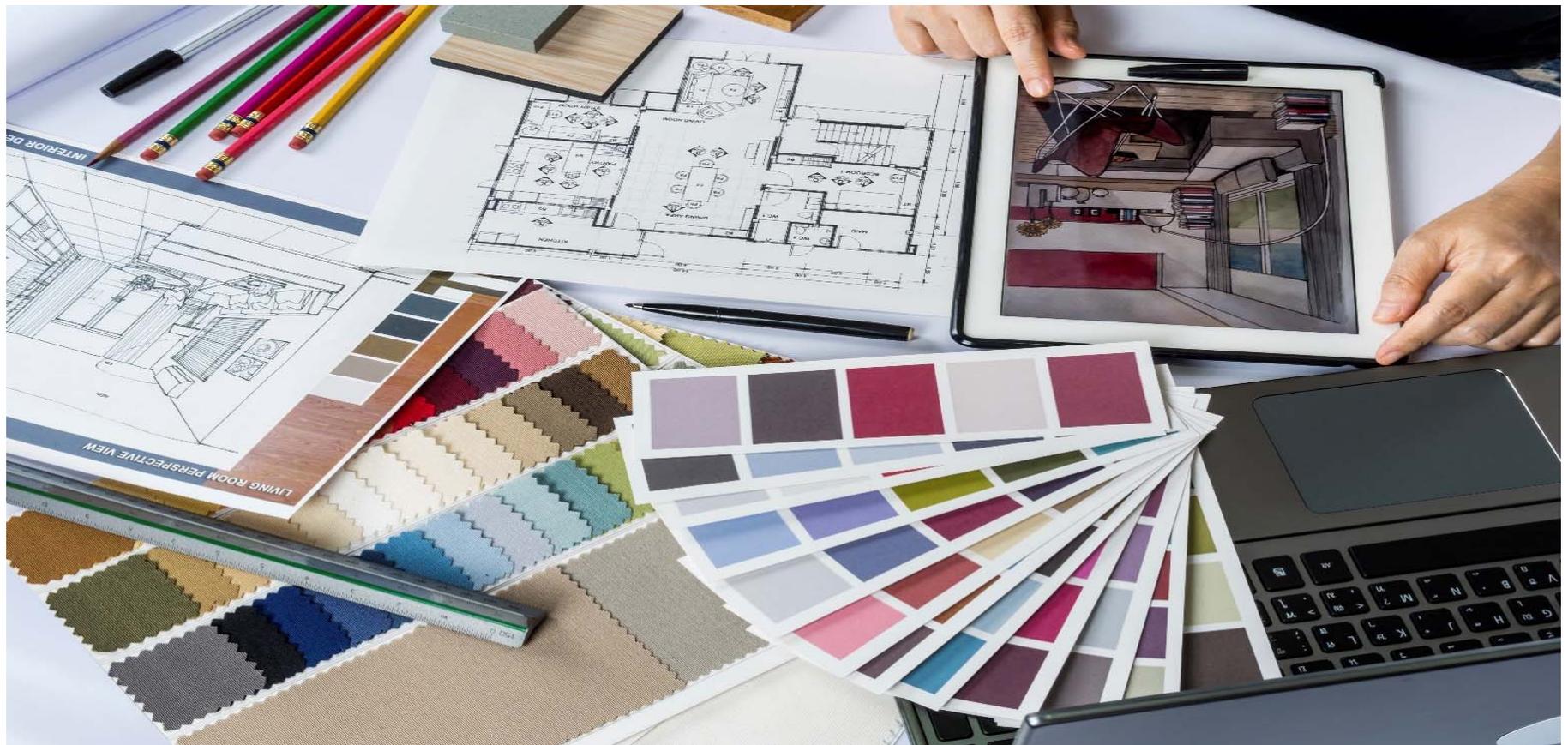
Construct and design environments that are functional, healthy, and safe

Housing Options

Independent Living

Similar to apartments, with social activities, maintenance-free housing, and prepared meals. Minor assistance is provided if needed.

Assisted Living

Assisted living facilities are similar to independent living communities, but can provide assistance with bathing, dressing, and medication.

Aging in Place

Aging in-place—staying in one's home as long as possible—provides advantages of familiarity with the environment and the community.

How Does Design Support Aging in Place

1 in 4 homeowners planning to make modifications

Source: ASID Aging in Place Toolkit

How Does Design Support Aging in Place

These (5) key areas below should be considered when designing for the aging population to counteract the loss of function or independence as a result of physiological changes.

- Vision

- Hearing

- Strength

- Color Perception

- Memory/Orientation

Source: ASID Aging in Place Toolkit

It's Not Just About the Home

- Aging population will affect every interior environment
  - Hospitality
  - Workplace - offices, retail stores, etc.
  - Healthcare
  - Retail
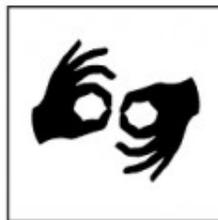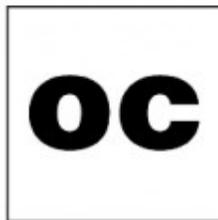
Source: ASID Aging in Place Toolkit
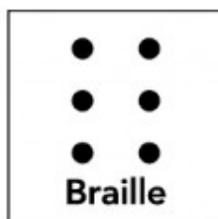
How Aging Eyes See Color

- Difficult to differentiate shades of blue, green, and purple

- Contrasts less noticeable

- Lose the ability to discriminate among pale colors

- Best able to discriminate among bright and intense colors

- Best able to discriminate warmer colors as opposed to cool colors.
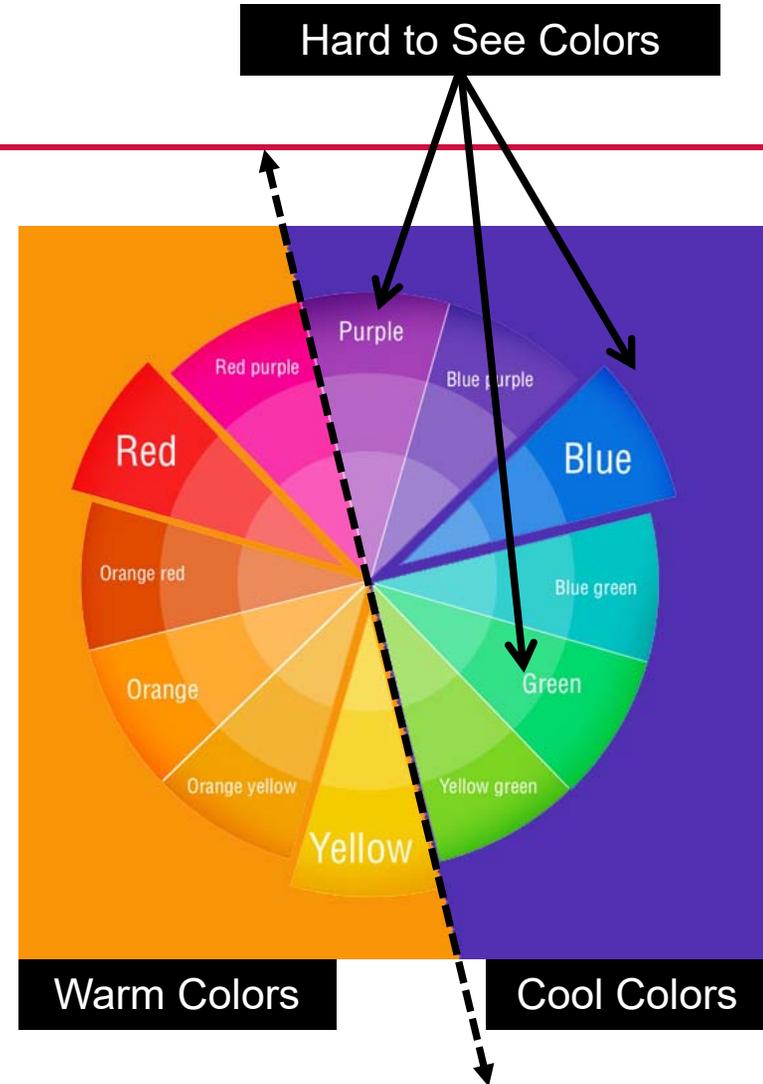
Colors to Avoid

- Yellow color schemes are difficult

- Pastel yellow will look white

- Blue, blue-green, or violet will look gray

- Colors adjacent on color wheel hard to discriminate

- Colors close in lightness or darkness hard to discern
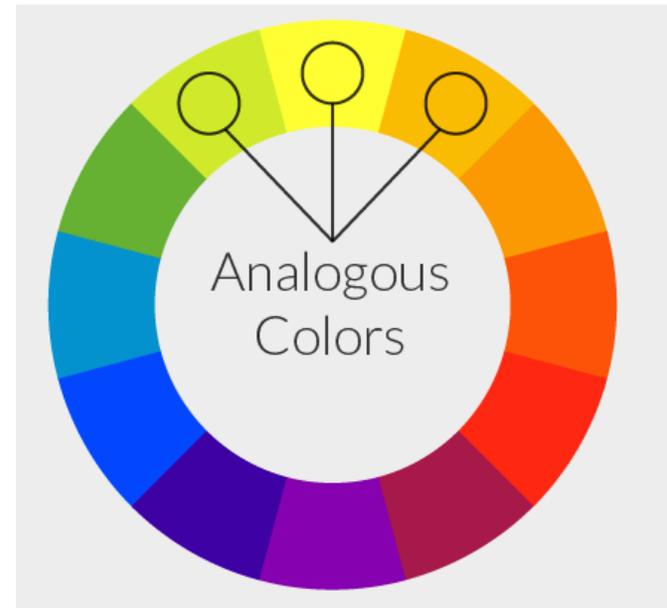
Colors to Select

- Contrast is the most important design aspect to emphasize

    - Contrast of hue

    - Contrast of value (lightness and darkness) of the same hue

    - Contrast of cool against warm colors

CONTRAST OF HUE

HIGH CONTRAST
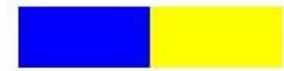
LOW CONTRAST

WARM/COLD CONTRAST
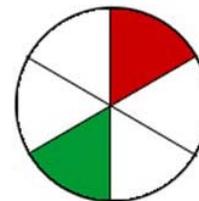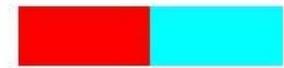
Light Reflectance Value (LRV)

Light Reflective Value (LRV) Scale

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
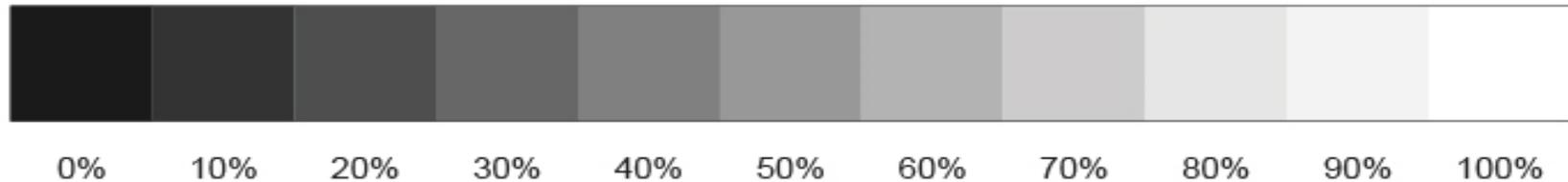
Mid Range

Below 50%
Color is Darker
Absorbs more light than
it will reflect
back in the room

Above 50%
Color is Lighter
Reflects more light back
into the room
than is absorbed

LRV 10

LRV 84

Light Reflectance Value (LRV)

Color Name	Number	LRV
Hunter Green	2041-10	5.5
Huntington Beige	HC-2?	38.9
Hydrangea Flowers	2008-4?	38.9
I Love You Pink	2077-7?	79.6
Ice Blue	2052-7?	80.2
Ice Mist	2123-70	90.1
Ice Mist	OC-67	90.1
Iceberg	2122-50	73.?
Iced Cube Silver	2121-50	74.2
Iced Mauve	2115-50	51.5
Iced Mint	2030-70	89.3
Iced Slate	2130-60	57.5
Icicle	2142-70	83.7
Icicle	OC-60	83.7
Icing on the Cake	2049-70	84.2
Icy Blue	2057-70	79.5
Icy Moon Drops	2056-70	82.9
Iguana Green	2028-10	30.1
Incense Stick	2115-20	7.4
Indian White	OC-88	77.5
Innocence	2055-70	81.8
Intense White	OC-51	74.4
Irish Clover	2038-20	15.8
Irish Mint	2041-70	85.6
Irish Moss	2036-20	16.9
Irish Spring	2038-70	86.7
Iron Mountain	2134-30	9.1
Iron Ore Red	2089-10	14.5
Italian Ice Green	2035-70	83.7
Italiano Rose	2087-30	19.9
Ivory Tower	2157-70	89.0
Ivory Tusk	2153-70	87.2

Color Used to Highlight - Bathrooms

- Toilet, sink, and bathtub should stand out against wall color

- Painting walls more economical than renovating bathroom

Image: Hewi.com

One in four older Americans falls every year.
Leading cause of fatal and nonfatal injuries for people aged 65 and older.

Color Used to Highlight - Bedrooms

- Doors, frames, and light switches should contrast with wall color

Courtesy Dementia Enabling Environments, AU

- Wall color behind bed should contrast with bed's headboard

Color Used to Highlight – Living, Dining, Path of Travel

- Wall color should contrast against furniture and furnishings

- Contrast table settings

Courtesy AARP Home Fit Guide

- Handrails contrast against walls
- Stairs well lighted
- Edge of steps are clearly visible

Color to Facilitate Navigation

Wall vs Floor   **Wall vs Handrails**   **Wall vs Resting Spots**
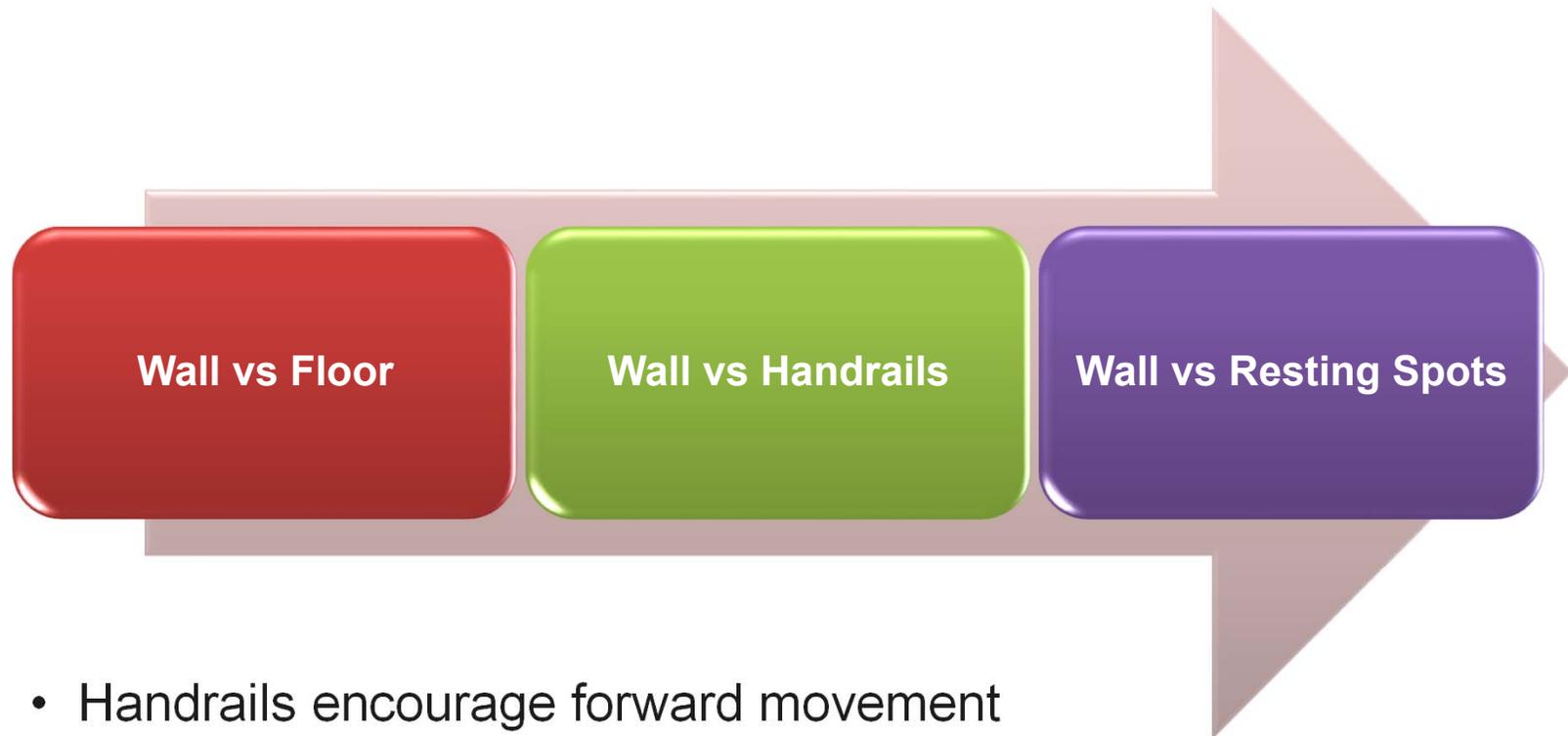
- Handrails encourage forward movement
- Resting spots may be needed
- Color contrast helps these features stand out
- Seeing the way to navigate instills confidence

Color Used to Highlight - Facilities

Hallways in Facilities

- Wall color should contrast with floor color and handrails

- Absence of color in a patient corridor, all white or neutral tones, can create a visual hazard for aging eyes

Color to Facilitate Orientation

- "What is this room for?"

- Not knowing produces anxiety and disorientation

- Wall color should contrast with defining features

- Visible environmental clues answer, "Where am I?"

Furniture

Appliances

Fixtures

Orientation within a Space
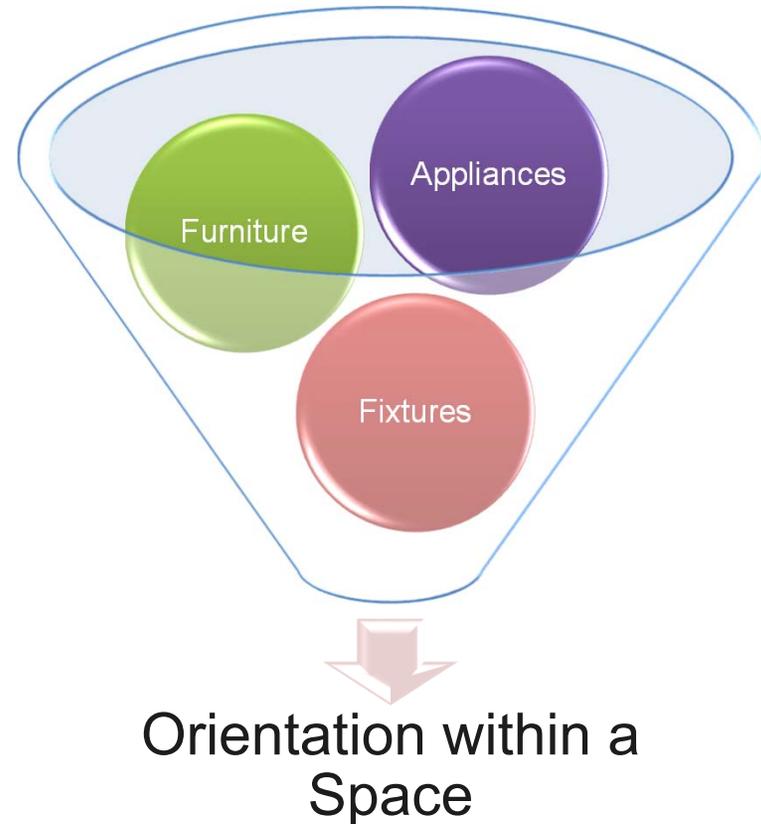
Color & Design Used to Highlight

Unobstructed sight lines from the bedroom to toilet.

Ensure clear color contrasts between the wall, the light switch box and the switch itself so it can be identified without difficulty.

Some people with dementia may not recognize their reflection in a mirror and think a stranger is the room. Consider removing or covering mirrors if this is a problem.

To aid in wayfinding to the bed ensure prominent color contrasts between the floor, the bed head and the cover sheet – sheet and pillow

Vinyl is softer and safer than conventional hardwood or tile flooring (Materials and Surfaces)

Dementia Enabling Environments

Color Used to Hide

- Color can camouflage areas preferably not highlighted, such as exit doors

- Patients leaving Alzheimer's care unnoticed can face harm

Anxiety Agitation	Wanting to leave	Wandering Pacing
Fearing restraints	Distress Restlessness	Trying doors on sight

Color Used to Hide

Remove door handle – or match color of the door handle and frame with surrounding wall

Paint Considerations

Safe to Breathe

Durable

Material & Paint
Considerations

Scuff Resistant

Stain-Resistant
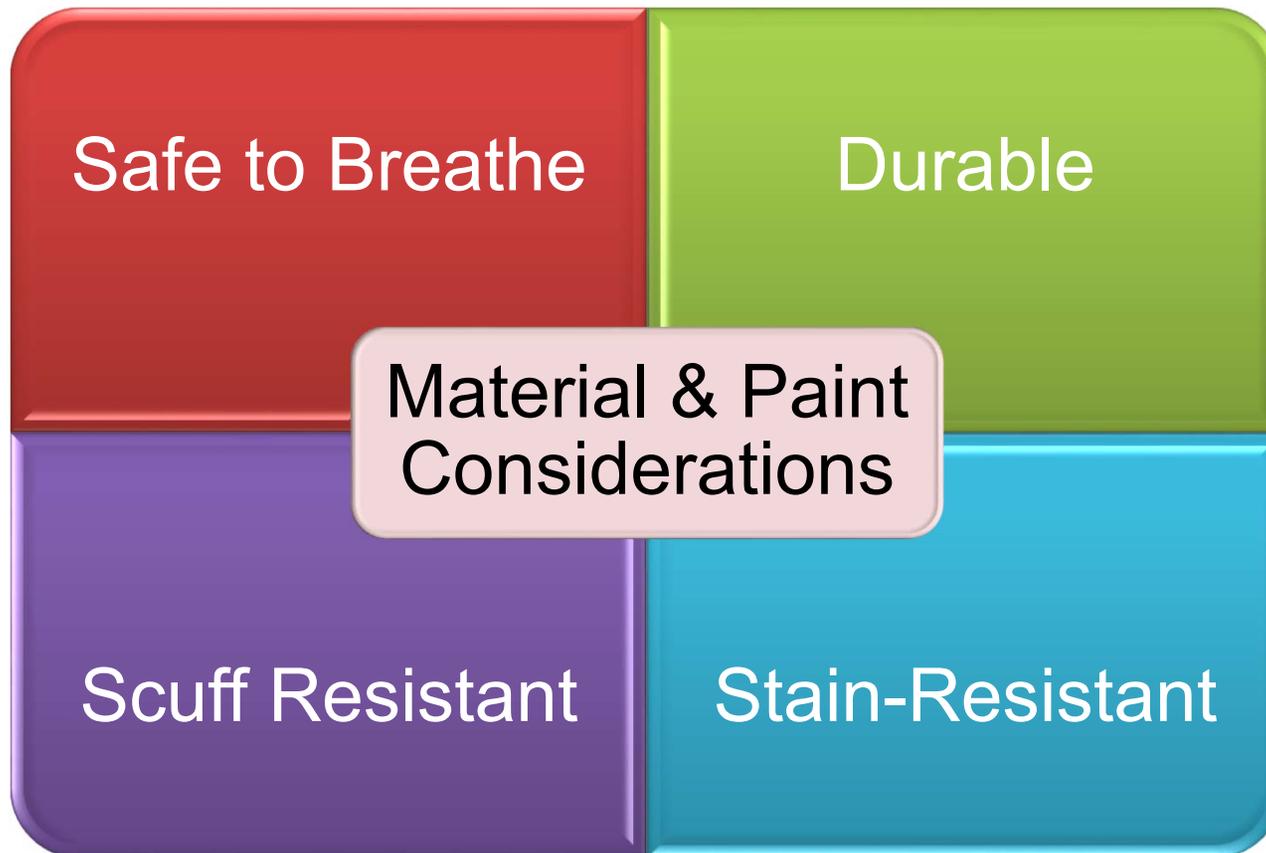
Paint Challenges in Environments for the Aging

- Constant contact with people and equipment (walkers, wheelchairs, rolling beds, carts) and furniture

- Scuffs, marks and stains

- Constant maintenance, cleaning, retouching and repainting

- Overtime paint deteriorates; less durable
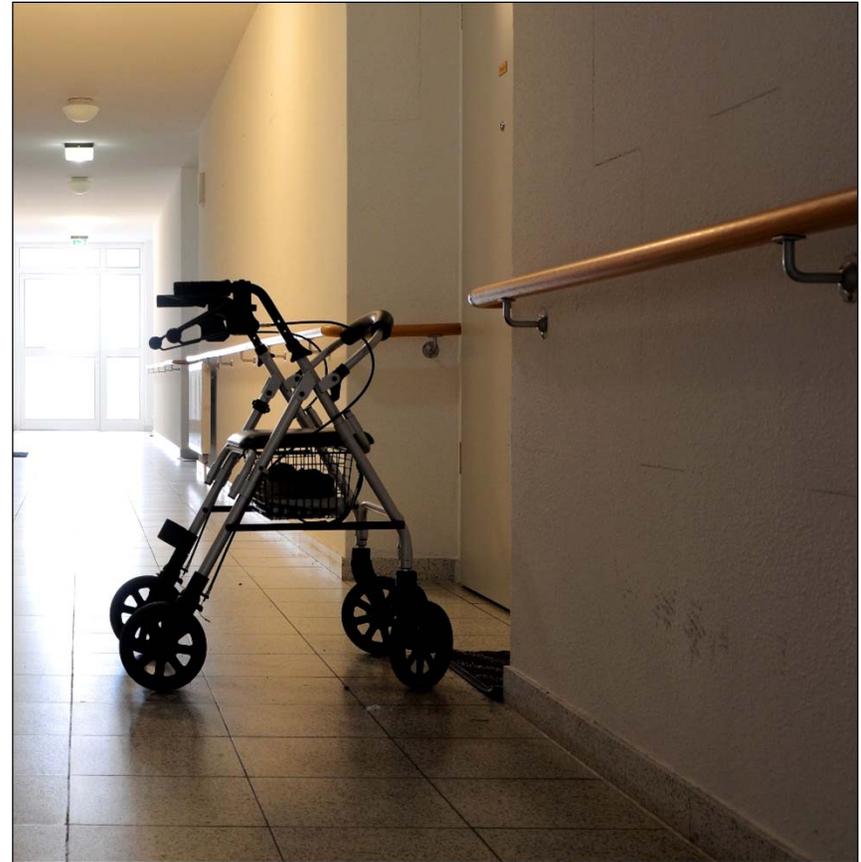
VOCs are Irritants

Furniture

Paint

Cleaning products

Electronic Equipment

Carpet

Textiles

VOCs are Irritants

Short-term exposure to VOC can cause:
Health issues for Asthma and Allergy sufferers
Eye, Nose and Throat Irritation
Shortness of Breathe
Sinus Congestion, Sneezing & Coughing
Headaches and Nausea
Dizziness, Loss of Coordination
Allergic Skin Reactions
Memory Impairment

Long-term exposure to VOC can damage:
Liver
Kidneys, and
Central nervous system

Advantages of Waterborne Technology

Increased Overall Performance of Coatings

Low Odor

Low VOC & Low Emissions

Waterborne Colorants

Easy Clean-Up

Gloss Retention, Fade Resistant, No Rub Off

Non-Yellowing, Stain Blocking

Durable & Flexible

Low-VOC Paint & Colorants

Before Tinting
Low VOCs

CARB
< 50 g/L

SCAQMD
< 50 g/L

After Tinting
VOCs

Tinting
>100 g/L

CARB
< 50 g/L

SCAQMD
< 50 g/L

- VOC levels on paint label measured in base before tinting

- Tinting can add 100 g/L or more

- Check the manufacturers TDS sheet for VOC levels

Technical Data	Pastel Base
Vehicle Type	100% Acrylic Latex
Pigment Type	Titanium Dioxide
Volume Solids	45.5%
Coverage per Gallon at Recommended Film Thickness	375 – 425 Sq. Ft.
Recommended Film Thickness – Wet	4.0 mils
– Dry	1.8 mils

Volatile Organic Compounds (VOC)

0 Grams / Liter*   0 LBS / Gallon

-Zero VOC post tint (any base and any color)

Summary

- Number of senior citizens is exploding

- Normal aging and diseases of old age affect color perception

- Diminished color vision affects day-to-day activities

- Color contrast facilitates orientation, navigation, and participation

- Paint can easily and economically add contrast to any environment

- Specify high-quality, low-VOC paint

Thank you!

TO LEARN MORE

Alzheimer's Association: ALZ.ORG

AARP: AARP.org

Dementia Friendly Environments: HEALTHVIC.ORG

ASID Aging in Place Toolkit: ASID.ORG

EXTREME DURABILITY FOR HIGH-TRAFFIC AREAS

High-traffic spaces demand exceptionally tough coatings. Ultra Spec® SCUFF-X™ is an innovative, one-component interior acrylic latex paint offering superior scuff-resistance and washability without the strong odor, pre-mixing, short pot life and application difficulties associated with similar, two-component products.

Resources

Alzheimer's Association®. "2012 Alzheimer's Disease Facts and Figures." Alz.org®. March 2012.
https://www.alz.org/documents_custom/2012_facts_figures_fact_sheet.pdf (Accessed Feb. 24, 2014)

Alzheimer's Association®. "Parkinson's Disease Dementia." Alz.org®. 2014. http://www.alz.org/dementia/parkinsons-
disease-symptoms.asp (Accessed Feb.24, 2014)

Bier, Deborah, Ph.D. "Improving Alzheimer's and Dementia Care: The Eyes Have It." Psych Central. 2014.
http://psychcentral.com/lib/improving-alzheimers-and-dementia-care-the-eyes-have-it/00013200 (Accessed Feb. 24, 2014)

AARP®. "The AARP Home Fit Guide" AARP.org © 2010
http://assets.aarp.org/www.aarp.org_/articles/livable_communities/aarp_home_fit_guide_042010.pdf

Bissell, Kelly. "Designing for Those with Dementia Using the Principle of Wayfinding." Senior Thesis, Marymount
University, 2010. http://hdl.handle.net/10994/77 (Accessed Feb. 24, 2014)

Bosch, Sheila J., Ph.D. et al. "The Application of Color in Healthcare Settings." The Center for Health Design, 2012.
http://www.ki.com/pdfs/Color_in_Healthcare_Settings_Paper.pdf (Accessed Feb. 24, 2014)

Dementia Enabling Environments. Alzheimer's Australia, 2014. http://www.enablingenvironments.com.au/ (Accessed Feb. 24,
2014)

Dementia Friendly Environments. Department of Health Victoria, Australia.
http://www.health.vic.gov.au/dementia/changes/interior-design.htm

Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion.
"Dementia/Alzheimer's Disease." Centers for Disease Control and Prevention. 16 Dec. 2011.
http://www.cdc.gov/mentalhealth/basics/mental-illness/dementia.htm (Accessed Feb. 24, 2014)

Employment and Social Development Canada. "Canadians in Context—Aging Population." Government of Canada.
http://www4.hrsdc.gc.ca/.3ndic.1t.4r@-eng.jsp?iid=33 (Accessed Feb. 24, 2014)

"Green Seal Standards." Green Seal. 2013.
http://www.greenseal.org/GreenBusiness/Standards.aspx?vid=ViewStandardDetail&cid=13&sid=6 (Accessed Feb. 24, 2014)

"A new way of looking at the impact of dementia in Canada." Alzheimer Society of Canada. September 2012.

"Design for Aging in Place Toolkit." ASID. (Accessed Mar 29, 2016)

Images on silde (1) courtesy of Google, Pixel.com

Resources

Global Health and Aging: https://www.nia.nih.gov/research/publication/global-health-and-aging/humanitys-aging

Hobbs, Frank B. and Bonnie L. Damon. "65+ in the United States." *U.S. Bureau of the Census. Current Population Reports, Special Studies, P23-190.* Washington, D.C.: U.S. Government Printing Office, April 1996. http://www.census.gov/prod/1/pop/p23-190/p23-190.pdf (Accessed Feb. 24, 2014)

Li, Rose Marie, Ed. "Why Population Aging Matters: A Global Perspective." *Department of State and the Department of Health and Human Services.* Washington, D.C.: National Institute on Aging, National Institutes of Health, 13 March 2007. http://2001-2009.state.gov/g/oes/rls/or/81537.htm#1 (Accessed Feb. 24, 2014)

National Eye Institute. National Institutes of Health. http://www.nei.nih.gov/ (Accessed Feb. 24, 2014)

Parkinson's Disease Foundation. Parkinson's Disease Foundation, Inc., 2014. http://www.pdf.org/ (Accessed Feb. 24, 2014)

Statistics Canada. "Generations in Canada." *Government of Canada.* http://www12.statcan.ca/census-recensement/2011/as-sa/98-311-x/98-311-x2011003_2-eng.cfm (Accessed Feb 24, 2014)

Tofle, Ruth Brent, Ph.D. et al. "Color in Healthcare Environments: A Research Report." The Coalition for Health Environments Research (CHER), July 2004. http://www.healthdesign.org/sites/default/files/color_in_hc_environ.pdf (Accessed Feb. 24, 2014)

Utton, Damian. "The Design of Housing for People with Dementia." *Journal of Care Services Management* 3.4: 380–390. http://www.housinglin.org.uk/_library/Resources/Housing/Support_materials/Other_reports_and_guidance/The_design_of_housing_for_people_with_dementia.pdf (Accessed Feb. 24, 2014)

Vincent, Grayson K. and Victoria A. Velkoff. "THE NEXT FOUR DECADES, The Older Population in the United States: 2010 to 2050." *Current Population Reports, P25-1138*. Washington, D.C.: U.S. Census Bureau, 2010. https://www.census.gov/prod/2010pubs/p25-1138.pdf (Accessed Feb. 24, 2014)

VisionAware™. American Foundation for the Blind, 2013. http://www.visionaware.org/ (Accessed Feb. 24, 2014)

Alzheimer Society of Canada: "A new way of looking at the impact of dementia in Canada http://www.alzheimer.ca/~/media/Files/national/Media-releases/asc_factsheet_new_data_09272012_en.pdf (Accessed March 17, 2016)