Sunshine Health Foundation

3500 Fairmount Street # 417

Dallas, TX 75219

214.766.7283

October 8, 2020

Office of Science Quality
Centers for Disease Control and Prevention
InfoQuality@cdc.gov

This is a submission of an information quality request for correction.

Detailed description of the specific information that needs to be corrected.

The information that needs to be corrected is as follows:

The CDC's webpage titled "Skin Cancer – Sun Safety" tells the American public that:

> "**Sun Safety**
> The sun's ultraviolet (UV) rays can damage your skin in as little as 15 minutes…."
> **Shade**
> You can reduce your risk of skin damage and skin cancer by seeking shade under an umbrella, tree, or other shelter before you need relief from the sun. Your best bet to protect your skin is to use sunscreen or wear protective clothing when you're outside – even when you're in the shade.
> **Clothing**
> When possible, long-sleeved shirts and long pants and skirts can provide protection from UV rays. Clothes made from tightly woven fabric offer the best protection. A wet T-shirt offers much less UV protection than a dry one, and darker colors may offer more protection than lighter colors. Some clothing certified under international standards comes with information on its ultraviolet protection factor. If wearing this type of clothing isn't practical, at least try to wear a T-shirt or a beach cover-up. Keep in mind that a typical T-shirt has an SPF rating lower than 15, so use other types of protection as well.
>
> ***
>
> **Sunscreen**
> Put on broad spectrum sunscreen with SPR 15 or higher before you go outside, even on slightly cloudy or cool days. Don't forget to put a thick layer on all parts of exposed skin. Get help for hard-to-reach places like your back. And remember, sunscreen works best when combined with other options to prevent UV damage."

Further, the CDC's webpage titled "Sun Safety Tips for Families" tells the American public that

"Nearly 5 million people are treated for skin cancer each year in the United States. Skin cancer can be serious, expensive, and sometimes even deadly. Fortunately, most skin cancers can be prevented. Ultraviolet (UV) rays—from the sun or from artificial sources like tanning beds—are known to cause skin cancer. Damage from exposure to UV rays builds up over time, so sun protection should start at an early age. **Protect your family and yourself from skin cancer!**"

Nothing on these webpages or elsewhere on the CDC's website warns the American public of any health risks of following the CDC's sun protection advice. Most Americans suffer adverse health consequences as a result of insufficient sun exposure.

The specific reasons for believing the information does not comply with OMB, HHS or CDC guidelines and is in error.

The information does not comply with OMB, HHS and CDC guidelines because it recommends avoidance of sun exposure and daily use of sunscreen without disclosing the health risks of following this recommendation. This failure to disclose the risks of following the CDC's advice is causing harm to millions of Americans. 21st Century science shows that most Americans suffer severe adverse consequences as a result of insufficient sun exposure, and that insufficient sun exposure may in fact be the nation's second largest public health problem after tobacco [1]. CDC and HHS guidelines require the CDC and HHS to safeguard American's health. Additionally, the information misinforms the American public on the risks of skin cancer from UV rays, which may be part of the reason that the incidence of melanoma has increased at a fairly steady exponential rate from 1935 to the present.

The best metric for determining the amount of sun exposure experienced by a person is the level of the biochemical 25(OH)D in their blood. This is because over 90% of this biochemical is produced by sun exposure.

A review of 21st century science shows that low levels of serum 25(OH)D are correlated with:

- 12.8% of all deaths in the United States (340,000 deaths annually) [2].
- Increased risk of premature death of the same order of magnitude as that from smoking [3].
- 83% increased risk of acute respiratory tract infection (ARTI) from colds and influenza and 146% increased risk of death from ARTI from colds and influenza [4].
- 104% increased risk of colon cancer [5].
- 400% increased risk of breast cancer [6].
- 376% increased risk of death from breast cancer in breast cancer patients [7].
- Increased risk of high blood pressure [8] and cardiovascular disease [9].
- 64% increased risk of metabolic syndrome [10] and increased risk of obesity [11].
- 122% increased risk of Alzheimer's disease [12].
- 142% increased risk of autistic offspring [13].

- 35% increased risk of type 2 diabetes [14].
- Increased risk of asthma [15-17].
- 100-120% increased risk of multiple sclerosis [18-26].
- Increased risk of myopia [27-29].
- Increased risk of deficiency in serotonin and brain serotogenic activity linked to sudden infant death syndrome (SIDS) [30].

It is well known, and has been for 100 years, that African-Americans suffer from worse health than white Americans. A review of 21st century science explains why:

- All of the above adverse health consequences are worse for African-Americans than for white Americans. The prevalence of 25(OH)D levels less than 30 ng/mL is 97% for Arican-Americans vs. 77% for white Americans, and the prevalence of 25(OH)D levels less than 10 ng/mL is 29% for African-Americans vs. 6% for white Americans [31]. The reason for these low levels of serum 25(OH)D in African-Americans is that African-Americans have more melanin in their skins than white Americans, and melanin partially blocks radiation from the sun As a result, if an African-American gets exactly the same amount of sun exposure as a white American, the African-American will have lower serum 25(OH)D than the white American. This was not a problem for African-Americans' ancestors who evolved under the more powerful tropical sun, but it became a problem for African-Americans when they were forcibly migrated from the tropics to the higher latitudes of the United States.
- Evidence that the above adverse health consequences are worse for African-Americans is provided by statistics on the relative prevalence of several sun-related diseases in African-Americans vs. white Americans.
- The prevalence of colorectal cancer in the United States is 25% higher in African-Americans than in white Americans [32].
- The prevalence of hypertension in the United States is 37% higher in African-Americans than in white Americans [33], and mortality due to hypertension and its consequences is 4 to 5 times more likely in African-Americans than in white Americans [34]. Notably, the prevalence of hypertension in black-skinned persons is far lower in Africa and increases in a consistent gradient from Africa to the Caribbean to the United States [35].
- The prevalence of type 2 diabetes in the United States is 100% higher in African-Americans than in white Americans [36].
- The prevalence of Alzheimer's disease in the United States is 100% higher in African-Americans than in white Americans [37].
- The prevalence of asthma in the United States is 35% higher in African-Americans than in white Americans, and the mortality rate of asthma is 400% higher for African-Americans [38].

- The prevalence of multiple sclerosis in the United States is 47% higher in African-Americans than in white Americans [39]. Minority populations in the United States have a higher incidence of multiple sclerosis than in their ancestral countries of origin [40].
- A recent population-based cross-sectional study on preschool American children aged 6–72 months reported a myopia prevalence of 1.2% in non-Hispanic whites, 3.7% in Hispanics, 3.98% in Asians, and 6.6% in African Americans. Greater difference in the prevalence of myopia was found in older school-aged children of different ethnicity [41].
- SIDS rates are more than twice as high among African Americans as among whites (1.4 per 1,000 versus 0.6 per 1,000) [42].
- Melanoma is rare among African-Americans, with incidence rates of 1.2 per 100,000 men and 1.0 per 100,000 women, compared with 33.0 per 100,000 men and 20.2 per 100,000 women among white Americans [43].

It has recently become a matter of common knowledge that African-Americans are being disproportionately adversely affected by COVID-19. Data from the CDC indicate that infection is 2.6x higher and death is 2.1x higher for African-Americans than for white Americans. It is known that death from COVID-19 normally results from acute respiratory tract infection (ARTI). These data for the disproportionate adverse effects of COVID-19 on African-Americans are similar to the 1.83x higher infection for colds and influenza and 2.46x higher death from colds and influenza for persons with low serum 25(OH)D vs. high serum 25(OH)D [4].

In addition to the foregoing, the information on the CDC's website on the risks of skin cancer from UV rays is not correct. The correct science on the relationship between sun exposure and skin cancer is set forth in *Alfredsson et al.* 2020 [1]. The authors of *Alfredsson et al. 2020* include Dr. Frank R. de Gruijl, the world's leading scientist on the biomolecular relationship between sun exposure and skin cancer, and Dr. Bruce A. Armstrong, the world's leading scientist on the epidemiological relationship between sun exposure and skin cancer. Among other matters, it is noted that melanoma risk from sun exposure is correlated only to severe sunburns (sunburns with blistering or pain for at least 2 days) and not to non-burning sun exposure even in very large amounts. Squamous cell carcinoma is correlated to sunburns and to chronic non-burning sun exposure of at least 20,000 hours for northern Europeans and 70,000 hours for southern Europeans. Basal cell carcinoma is correlated to sunburns and, to a lesser extent than squamous cell carcinoma, to chronic non-burning sun exposure [1].

The small amount of additional sun exposure (10-30 minutes a day of sunbathing three times a week) needed for good health among people with low serum 25(OH)D will not increase the risk of melanoma at all if sunburns are avoided. Since most squamous cell carcinomas and basal cell carcinomas are located on the face and neck, such sun exposure will not materially increase the risk of squamous cell carcinoma or basal cell carcinoma if the face and neck are

covered. It is important that the eyes be protected while sunbathing, by keeping them closed or wearing sunglasses [44], and the importance of avoiding sunburns cannot be overemphasized.

Alfredsson et al. 2020 [1] is a landmark study by fifteen of the world's leading scientists on sun exposure and human health that for the first time identifies insufficient sun exposure as a real public health problem.

References:

1. Alfredsson L, Armstrong BK, Butterfield DA, Chowdhury R, de Gruijl FR, Feelisch M, Garland CF, Hart PH, Hoel DG, Jacobsen R, Lindqvist PG, Llewellyn DJ, Tiemeier H, Weller RB, Young AR. Insufficient Sun Exposure Has Become a Real Public Health Problem. Int J Environ Res Public Health 2020; 17, 5014; doi:10.3390/ijerph17145014.

2. Chowdhury R, Kunutsor S, Vitezova A, Oliver-Williams C, Chowdhury S, Kiefte-de-Jong JC, Khan H, Baena CP, Prabhakaran D, Hoshen MB, Feldman BS, Pan A, Johnson L, Crowe F, Hu FB, Franco OH (2014) Vitamin D and risk of cause specific death: systematic review and meta-analysis of observational cohort and randomised intervention studies. BMJ 2014; 348:g1903.

3. Lindqvist PG, Epstein E, Nielsen K, Landin-Olsson M, Ingvar C, Olsson H. Avoidance of sun exposure as a risk factor for major causes of death: a competing risk analysis of the Melanoma in Southern Sweden cohort. J Int Med 2016; doi:10.1111/joim.12496.

4. Pham H, Rahman A, Majidi, Waterhouse M, Neale RE. Acute Respiratory Tract Infection and 25-Hydroxyvitamin D Concentration: A Systematic Review and Meta-Analysis. Int J Environ Res Public Health 2019; 16:3020; doi:10.3390/ijerph16173020.

5. Gorham, E.D.; Garland, C.F.; Garland, F.C.; Grant, W.B.; Mohr, S.B.; Lipkin, M.; Newmark, H.L.;Giovannucci, E.; Wei, M.; Holick, M.F. Optimal vitamin D status for colorectal cancer prevention: A quantitative meta analysis. Am. J. Prev. Med. 2007, 32, 210–216.

6. McDonnell SL, Baggerly CA, French CB, Baggerly LL, Garland CF, Gorham ED, Hollis BS, Trump Dl, Lappe JM. Brest cancer risk markedly lower with serum 25-hydroxyvitamin D concentrations more than 60 ng/mL vs less than 20 ng/mL (150 vs 50 nmol/L): Pooled analysis of two randomized trials and a prospective cohort. Plos One 2018 https://doi.org/10.1371/journal.pone.0199265.

7. Mohr SB, Gorham ED, Kim J, Hofflich H, Garland CF. Meta-analysis of Vitamin D Sufficiency for Improving Survival of Patients with Breast Cancer. Anticancer Res 2014; 34:1163-1166.

8. Liu D, Fernandez BO, Hamilton A, Lang NN, Gallagher JMC, Newby DE, Feelisch M, Weller RB. UVA Irradiation of Human Skin Vasodilates Arterial Vasculature and Lowers Blood Pressure Independently of Nitric Oxide Synthase. J Invest Dermatol 2014; 134:1839-1846.

9. Weller, R.B. The health benefits of UV radiation exposure through vitamin D production or non-vitamin D pathways. Blood pressure and cardiovascular disease. Photochem. Photobiol. Sci. 2017, 16, 374–380.

10. Vitezova A, Zillikens MC, van Herpt TTW, Sijbrands EJG, Hofman A, Uitterlinden AG, Franco OH, Kiefte-de Jong JC. Vitamin D status and metabolic syndrome in the elderly: the Rotterdam Study. Eur Journal Endocrin 2015; 172:327-335.

11. Geldenhuys S, Hart PH, Endersby R, Jacoby P, Feelisch M, Weller RB, Matthews V, Gorman S. Ultraviolet Radiation Suppresses Obesity and Symptoms of Metabolic Syndrome Independently of Vitamin D in Mice Fed a High-Fat Diet. Diabetes 2014; 63: 3759-3769.

12. Littlejohns Littlejohns TJ, Henley WE, Lang IA, Annweiler C, Beauchet O, Chaves PHM, Fried L, Kestenbaum GR, Kuller LH, Langa KM, Lopez OL, Kos K, Soni M, Llewellyn DJ. Vitamin D the risk of dementia and Alzheimer disease. Neurology 2014; 83:920-928.

13. Vinkhuyzen AAE, Eyles DW, Burne THJ, Blanken LME, Kruithof CJ, Verhulst F, White T, Jaddoe VW, Tiemeier H, McGrath JJ. Gestational vitamin D deficiency and autism spectrum disorder. BJPsych Open 2017; 3:85-90.

14. Afzal S, Bojesen SE, Nordestgaard BG. Low 25-Hydroxyvitamin D and Risk of Type 2 Diabetes: a Prospective Cohort Study and Metaanalysis. Clin Chem 2013; 59:381–391.

15. Morgan KA, Mann EH, Young AR, Hawrylowicz CM. ASTHMA – comparing the impact of vitamin D versus UVR on clinical and immune parameters. Photochem Photobiol Sci 2017; 16:399-410.

116. Hollams EM, Teo SM, Kusel M, Holt BJ, Holt KE, Inouye M, De Klerk NH, Zhang G, Sly PD, Hart PH, Holt PG. Vitamin D over the first decade and susceptibility to childhood allergy and asthma. J Allergy Clin Immunol 2017; 139:472-481.

17. Zosky GR, Hart PH, Whitehouse AJO, Kusel MM, Ang W, Foong RE, Chen L, Holt PG, Sly PD, Hall GL. Vitamin D deficiency at 16-20 weeks gestation is associated with impaired lung function and asthma at 6 years of age. Ann Am Thorac Soc 2014; 11:571-577.

18. Munger KL, Hongell K, Aivo J, Soilu-Hänninen M, Surcel H-M, Ascherio A. Vitamin D Status During Pregnancy and Risk of Multiple Sclerosis in Offspring of Women in the Finnish Maternity Cohort. JAMA Neurol 2016; 73:515-519.

19. Munger KL, Hongell K, Aivo J, Soilu-Hanninen M, Surcel H-M, Ascherio A. 25-Hydroxyvitamin D deficiency and risk of MS among women in the Finnish Maternity Cohort. Neurology 2017; 89:1578-1583.

20. Salzer J, Hallmans G, Nystrom M, Stenlund,H, Wadell G, Sundstrom P. Vitamin D as a protective factor in multiple sclerosis. Neurology 2012; 79:2140–2145.

21. Nielsen NM, Munger KL, Koch-Henriksen N, et al. Neonatal vitamin D status and risk of multiple sclerosis: A population-based case-control study. Neurology 2017; 88: 44-51.

22. van der Mei IA, Ponsonby AL, Dwyer T, et al. Past exposure to sun, skin phenotype, and risk of multiple sclerosis: case-control study. BMJ 2003; 327:316-321.

23. Bjornevik K, Riise T, Casetta I, Drulovic J, Granieri E, Holmoy T, Kampman MT, Landtblom AM, Lauer K, Lossius A, et al. Sun exposure and multiple sclerosis risk in Norway and Italy: The EnvIMS study. Mult Scler 2014; 20:1042–1049.

24. Baarnhielm M, Hedstrom AK, Kockum I, et al. Sunlight is associated with decreased multiple sclerosis risk: no interaction with human leukocyte antigen-DRB1*15. Eur J Neurol 2012; 19:955-962.

25. Tremlett H, Zhu F, Ascherio A, Munger KL. Sun exposure over the life course and associations with multiple sclerosis. Neurology 22018; 90: e1191-e1199.

26. Langer-Gould A, Lucas R, Xiang AH, Chen LH, Wu J, Gonzalez E, Haraszti S, Smith JB, Quach H, Barcellos LF. MS Sunshine Study: Sun exposure but not vitamin D is associated with multiple sclerosis risk in blacks and hispanics. Nutrients 2018; 10:268.

27. French AN, Ashby RS, Morgan IG, Rose KA. Time outdoors and the prevention of myopia. Exp Eye Res 2013; 114:58-68.

28. Williams KM, Bentham GC, Young IS, McGinty A, McKay GJ, Hogg R, Hammond CJ,Chakravarthy U, Rahu M, Seland J, et al. Association between myopia, ultraviolet B radiation exposure, serum vitamin D concentrations, and genetic polymorphisms in vitamin D metabolic pathways in a multicountry European study. JAMA Ophthalmol. 2017; 135:47–53.

29. Cao K, Wan Y, Yusufu M, Wang N. Significance of outdoor time for myopia prevention: A systematic review and meta-analysis based on randomized controlled trials. Ophthalmic Res. 2020; 63:97–105.

30. Duncan JR, Paterson DS, Hoffman JM, Mokler DJ, Borenstein NS, Belliveau RA, Krous HF, Haas EA, Stanley C, Nattie EE, Trachtenberg FL, Kinney HC. Brainstem Serotonergic Deficiency in Sudden Infant Death Syndrome. JAMA 2010; 303:430-437.

32. Ginde AA, Liu MC, Camargo CA. Demographic Differences and Trends of Vitamin D Insufficiency in the US Population, 1988-2004. Arch Intern Med 2009; 169:626-632.

33. Williams R, White P, Nieto J, Vieira D, Francois F, Hamilton F. Colorectal Cancer in African Americans: An Update. Clin Transl Gastroenterol 2016; e185. Published online 2016 Jul 28. doi: 10.1038/ctg.2016.36.

34. Nesbitt SD. Management of Hypertension in African-Americans. US Cardiology 2009; 6:59-62.

35. Ferdinand KC, Armani AM. The management of hypertension in African Americans. Crit Pathw Cardiol 2007; 6:67-71.

36. Cooper R, Rotimi C, Ataman S, McGee D et al. The Prevalence of Hypertension in Seven Populations of West African Origin. Am J Public Health 1997; 87:160-168.

37. NIH Research Matters Sept 21, 2015. Diabetes in the U.S. Population.

38. Racial and Ethnic Disparities in Alzheimer's Disease: A Literature Review February 2014. Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Resources.

39. Silvers SK, Lang DM. Asthma in African Americans: What can we do about the higher rates of disease? Cleveland Clin J Med 2012; 79:193-201.

40. Khan O, Williams MJ, Amezcua L, Javed A, Larsen KE, Smrtka JM. Multiple sclerosis in US minority populations. Neurol Clin Pract 2015; 5:132-142.

41. Amezcua L, Lund BT, Weiner LP, Islam T. Multiple sclerosis in Hispanics: a study of clinical disease expression. Mult Scler 2011; 17:1010-1016.

42. Foster PJ, Jiang Y. Epidemiology of myopia. Eye (Lond) 2014; 28:202-208.

43. Matthews TJ, Menacker F, MacDorman MF. Infant Mortality Statistics from the 2001 Period Linked by Birth/Infant Death Data Set. Hyattsville, Md: National Center for Health Statistics; 2003.

44. National Cancer Institute. SEER Stat Facts Sheet: Melanoma of the Skin. August 23, 2016.

45. Roberts JE. Ultraviolet radiation as a risk factor for cataract and macular degeneration. Eye Contact Lens 2011; 37:246–24

The specific recommendation for correcting the information

The CDC should update its website to include 21st century science and present up-to-date and accurate scientific information on the risks and benefits of sun exposure. This appears to be the responsibility of the CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). If the Director of NCCDPHP, Dr. Karen Hacker, would like to contact me to discuss this matter, she can call be at 214-766-7283 or email me at allen.miller@sunshinehealthfoundation.org. I have been working on these issues for the past 10 years and know many of the foremost scientists in the world on the subject of sun exposure and human health.

Description of how the person submitting this complaint is affected by the information error

The purpose of the Sunshine Health Foundation is to educate the public on the health risks and benefits of sun exposure. Inaccurate science from the CDC conflicts with this purpose.

The name, mailing address, telephone number and e-mail address of the person making this complaint

The person making this complaint is the Sunshine Health Foundation, which is a charitable foundation. The mailing address, telephone number and e-mail address of the Sunshine Health Foundation is:

Sunshine Health Foundation

3500 Fairmount Street #417
Dallas, Texas 75219
Telephone 214-766-7283
E-mail address allen.miller@sunshinehealthfoundation.org

Respectfully submitted,

Sunshine Health Foundation

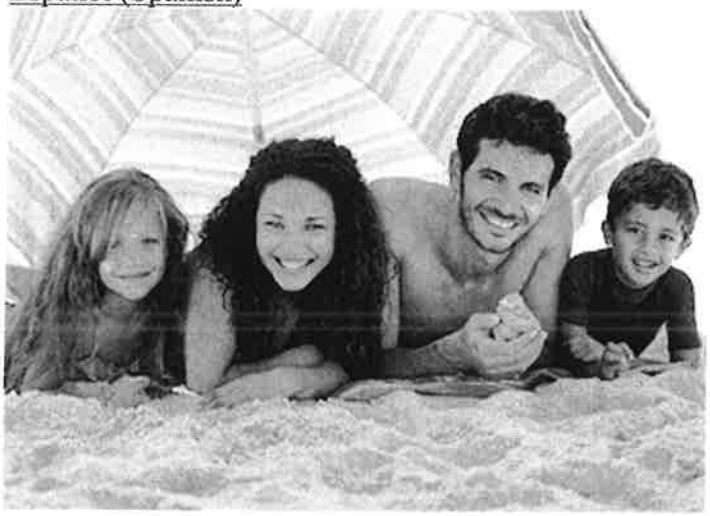
By:_____
Allen P. Miller, President

Attachments: CDC Webpage on Sun Safety
AAD's instructions on sun safety

CDC - https://www.cdc.gov/cancer/skin/basic_info/sun-safety.htm

Sun Safety

Español (Spanish)



You can reduce your risk of skin damage and skin cancer by seeking shade under an umbrella, tree, or other shelter before you need relief from the sun.
The sun's ultraviolet (UV) rays can damage your skin in as little as 15 minutes. Check the U.S. Environmental Protection Agency's UV Indexexternal icon for your area, and follow these recommendations to help protect yourself and your family.

Shade

You can reduce your risk of skin damage and skin cancer by seeking shade under an umbrella, tree, or other shelter before you need relief from the sun. Your best bet to protect your skin is to use sunscreen or wear protective clothing when you're outside—even when you're in the shade.

Clothing

When possible, long-sleeved shirts and long pants and skirts can provide protection from UV rays. Clothes made from tightly woven fabric offer the best protection. A wet T-shirt offers much less UV protection than a dry one, and darker colors may offer more protection than lighter colors. Some clothing certified under international standards comes with information on its ultraviolet protection factor.

If wearing this type of clothing isn't practical, at least try to wear a T-shirt or a beach cover-up. Keep in mind that a typical T-shirt has an SPF rating lower than 15, so use other types of protection as well.

Hat

For the most protection, wear a hat with a brim all the way around that shades your face, ears, and the back of your neck. A tightly woven fabric, such as canvas, works best to protect your skin from UV rays. Avoid straw hats with holes that let sunlight through. A darker hat may offer more UV protection.

If you wear a baseball cap, you should also protect your ears and the back of your neck by wearing clothing that covers those areas, using a broad spectrum sunscreen with SPF 15 or higher, or by staying in the shade.

Sunglasses

Sunglasses protect your eyes from UV rays and reduce the risk of cataracts. They also protect the tender skin around your eyes from sun exposure.

Sunglasses that block both UVA and UVB rays offer the best protection. Most sunglasses sold in the United States, regardless of cost, meet this standard. Wrap-around sunglasses work best because they block UV rays from sneaking in from the side.

"Sunscreen isn't an all-protective force field. It is intended to be combined with other sun-safety approaches." Get The Truth About Sunscreen in this blog post.

Sunscreen

Put on broad spectrum sunscreen with SPF 15 or higher before you go outside, even on slightly cloudy or cool days. Don't forget to put a thick layer on all parts of exposed skin. Get help for hard-to-reach places like your back. And remember, sunscreen works best when combined with other options to prevent UV damage.

How sunscreen works. Most sunscreen products work by absorbing, reflecting, or scattering sunlight. They contain chemicals that interact with the skin to protect it from UV rays. All products do not have the same ingredients; if your skin reacts badly to one product, try another one or call a doctor.

SPF. Sunscreens are assigned a sun protection factor (SPF) number that rates their effectiveness in blocking UV rays. Higher numbers indicate more protection. You should use a broad spectrum sunscreen with SPF 15 or higher.

Reapplication. Sunscreen wears off. Put it on again if you stay out in the sun for more than two hours and after swimming, sweating, or toweling off.

Expiration date. Check the sunscreen's expiration date. Sunscreen without an expiration date has a shelf life of no more than three years, but its shelf life is shorter if it has been exposed to high temperatures.

Cosmetics. Some makeup and lip balms contain some of the same sun-protective ingredients used in sunscreens. If they do not have SPF 15 or higher, be sure to use other forms of protection as well, such as sunscreen and a wide-brimmed hat.

AAD Website https://www.aad.org/public/diseases/skin-cancer/prevent/how

Follow these tips to protect your skin from the sun's damaging ultraviolet rays and reduce your risk of skin cancer:

- **Seek shade when appropriate**, remembering that the sun's rays are strongest between 10 a.m. and 2 p.m. If your shadow is shorter than you are, seek shade.
- **Wear sun-protective clothing**, such as a lightweight and long-sleeved shirt, pants, a wide-brimmed hat and sunglasses with UV protection, when possible. For more effective sun protection, select clothing with an ultraviolet protection factor (UPF) label.
- **Apply a broad-spectrum, water-resistant sunscreen with an SPF of 30 or higher.** Broad-spectrum sunscreen provides protection from both UVA and UVB rays.
    - Use sunscreen whenever you are going to be outside, even on cloudy days.
    - Apply enough sunscreen to cover all skin not covered by clothing. Most adults need about 1 ounce — or enough to fill a shot glass — to fully cover their body.
    - Don't forget to apply to the tops of your feet, your neck, your ears and the top of your head.
- When outdoors, **reapply sunscreen every two hours**, or after swimming or sweating.