

Just the Facts: Indoor Tanning

Evaluating the Claims of the Indoor Tanning Industry



Despite reputable scientific studies showing that tanning devices can cause skin cancer, representatives from the indoor tanning industry continue to make exaggerated claims about the health benefits of artificial ultraviolet (UV) light and indoor tanning. This fact sheet debunks many of the most egregious claims made by the industry.

Claim: The dangers of ultraviolet radiation from tanning beds are not scientifically proven.

FACT: A meta-analysis showed that indoor tanning use before the age of 35 increases melanoma risk by 59 percent, squamous cell carcinoma by 67 percent, and basal cell carcinoma by 29 percent.^{1,2} Similarly, a more recent study found that indoor tanning was associated with a six-fold increase in melanoma risk among women younger than age 30.³ A 2014 systematic review and meta-analysis estimated that over 410,000 cases of skin cancer may be attributable to indoor tanning in the U.S.⁴ Of those 410,000 cases, approximately 6,200 cases of melanoma have been attributed to indoor tanning.⁴ Additionally, over 3,200 indoor tanning-related acute injuries are treated in U.S. hospital emergency departments each year, with over 400 of those injuries affecting individuals under the age of 18.⁵

In 2009, the World Health Organization's (WHO) International Agency for Research on Cancer increased the classification of UV emitting indoor tanning devices to the highest level of cancer risk – Group 1 – “carcinogenic to humans.” This classification places tanning devices in the same category as other known carcinogens such as tobacco, benzene, and asbestos.⁶

Other well-established dangers of exposure to UV radiation include short-term adverse effects such as sunburn, eye damage (i.e., keratitis and corneal burns), fainting, and suppression of the immune system.^{5,7,8} The damage of UV radiation is cumulative over an individual's lifetime.⁷ Repeated exposures can result in long-term effects such as premature aging of the skin, wrinkles, solar keratosis, permanent eye damage, and skin and ocular cancers.^{5,7}

Claim: Tanning devices are sometimes used for medical purposes.

FACT: Phototherapy, a U.S. Food and Drug Administration (FDA) approved medical device often used for medical skin conditions (e.g. psoriasis and atopic dermatitis), emits concentrated UV radiation in different ratios than tanning devices. The ratio of UVA (long-wave) and UVB (short-wave) rays are closely monitored by a medical professional and change depending on the skin condition being treated.^{9,10} The rays are often applied directly to the area needing treatment - rather than the entire body as a tanning device would cover - and are often used either after a medication has been shown to be ineffective at treating the condition, or in conjunction with a medication.¹¹

Medical conditions should only be treated under the supervision of medical professionals using medically recognized treatments. This allows for discussions about the potential benefits, harms, and risks associated with a procedure, as well as close monitoring for abnormal side effects from treatment.

Claim: UV rays are vital for producing Vitamin D, an essential nutrient for good health.

FACT: Vitamin D is an essential vitamin that is needed for bone health. It can be obtained through many different sources including foods, supplements, and even exposure to UV light.¹² However, the amount of UV light needed to produce enough vitamin D puts a person at risk for skin cancer, making supplements and food the preferable sources for vitamin D over UV radiation.^{12,13}

Claim: Indoor tanning is no different from being outside in the sun.

FACT: Tanning devices deliver UVA dosages 5-15 times higher than delivered by the summer midday sun on a Mediterranean beach.¹⁴ UVA is the main UV wavelength individuals are exposed to in tanning devices and frequent exposure to UVA increases the risk of melanoma.¹⁵

Claim: Melanoma is not an issue for young people.

FACT: Since UV radiation is cumulative, it can take a significant amount of time before UV exposure develops into melanoma, which is why higher rates of melanoma are often seen in late adulthood. The current increase in melanoma in older populations is the result of exposure to UV radiation starting in childhood and young adult years.^{7,13} Therefore, preventing exposure to UV radiation as early as possible in a person's life is critical.

Melanoma is currently the fourth most common cancer in individuals aged 15-29 years, and the third most common cancer in individuals aged 25-29.¹⁶ Reducing exposure to UV radiation, both through indoor and outdoor tanning, is an important way of reducing these rates.

Claim: Tanning bed use by teens is not a big problem.

FACT: Melanoma is currently the second most common cancer among females aged 15-29 and the second most common cancer among females aged 25-29.¹⁶ Studies show using an indoor tanning device before the age of 35 increases the risk of melanoma by 59 percent, squamous cell carcinoma by 67 percent, and basal cell carcinoma by 29 percent.^{1,2}

Of the estimated 11.3 million Americans who tan indoors every year, approximately 1.6 million are adolescents.^{17,18} The most recent data indicates that, in 2015, one in ten high school girls have used a tanning device, with numbers increasing to one in six high school girls by their senior year.¹⁹ Among those teens who tanned in the last year, nearly 56 percent reported getting a burn from a tanning device or sun within the past year.¹⁹ Additionally, multiple studies have shown frequent use of indoor tanning among adolescents.^{3,20,21} Risk for melanoma increases with the number of total hours, sessions, and years that indoor tanning devices are used.^{12,22,23} A recent Centers for Disease Control and Prevention (CDC) study found that 16.7 percent of non-Hispanic white female high school students reported engaging in frequent indoor tanning (10 times or greater).²⁰ Moreover, melanoma incidence rates are steadily increasing, largely among youth non-Hispanic white females, and, in part, due to indoor tanning.^{3,20,24}

Youth are especially susceptible to the industry's misleading claims and are frequently the targets of industry marketing promotions (i.e. back-to-school, prom, and homecoming specials).²⁵

Claim: Tanning bed restrictions don't need to pertain to older teens.

FACT: Data shows that older teens are more at risk for exposure to the dangers of indoor tanning due to increased use.^{19,20} Female adolescents aged 17-18 are approximately twice as likely to tan indoors as female adolescents aged 14-15.¹⁷

Claim: Parents should be allowed to decide whether youth can use tanning devices.

FACT: Parental consent laws are not adequate in effectively deterring minors from using tanning devices. Studies show that many youth are able to purchase a tanning session without parental permission, even if it is required by law.^{26,27,28,29,30} A CDC study found that parental permission laws without age restriction were not associated with a reduction in adolescent use of indoor tanning, whereas age restriction laws were successful.³⁰ Additionally, literature shows that parental permission and parental tanning bed use are strongly associated with the use of indoor tanning among youth.^{22,29,31,32}

Products or devices deemed to be harmful are often regulated to protect consumers. WHO's International Agency for Research on Cancer categorizes tanning devices as its highest cancer risk category (Class 1) – “carcinogenic to humans” – and recommends that minors not be allowed to use them.⁶ In 2014, the FDA reclassified tanning devices to a class II device, which requires greater regulatory safety controls. In addition, the FDA recommended the devices should not be used on individuals under 18 years of age.³³ The U.S. Surgeon General released a call to action to prevent skin cancer, naming tanning beds as a risk factor for skin cancer and encouraged prohibiting the use of tanning devices for individuals under 18, as well as proper enforcement of state laws.¹³ Finally, in December 2015, the FDA issued two proposed rules on indoor tanning devices to protect public health through prohibiting the use of tanning devices by minors, raising awareness of the health risks of these devices for adults, and requiring sunlamp manufacturers and tanning facilities to take additional safety measures for these devices. Unfortunately, no further action was taken to finalize these rules at the federal level, making it that much more important for state and local governments to address the public health risks of indoor tanning devices.

The use of other harmful consumer products and services (e.g., tobacco) are not left to similar discretionary decision-making. To protect youth from the harmful effects of artificial UV radiation age restrictions laws that prohibit the use of tanning devices to individuals under 18 should be required, **without exceptions**. In addition, proper enforcement measures and oversight mechanisms should be in place to guarantee that youth are not gaining access to these harmful devices.

Claim: Tanning device operators go through training. Therefore, they can properly educate users about the potential risks of tanning.

FACT: Many tanning salon employees and operators are teenagers, and while they may be taught how to use and operate tanning devices, they are not provided with sufficient information to educate users about the short- and long-term consequences of using an indoor tanning device.

The indoor tanning industry promotes tanning beds as a safer alternative to sunbathing outdoors, citing the fact that some beds can be controlled and moderated by skin type and operated on a timer.³⁴ In fact, tanning beds have been estimated to deliver UVA radiation 5-15 times higher than what is delivered by the summer midday sun.¹⁴ In 2010, the Indoor Tanning Association settled out of court with the Federal Trade Commission (FTC) regarding false health and safety claims about indoor tanning.³⁴ Additionally,

congressional investigators contacted 300 indoor tanning facilities in 2012 and determined that 78 percent were claiming that indoor tanning was beneficial to the health of fair-skinned teenagers.²⁵

¹ The 59% increased risk is cited here: Boniol B., Autier P., Boyle P., Gandini S. Corrections: Cutaneous melanoma attributable to sunbed use: systematic review and meta-analysis. *BMJ*. 2012; 345:e8503. Published December 2012; which is a correction of the original article cited here: Boniol B., Autier P., Boyle P., Gandini S. Cutaneous melanoma attributable to sunbed use: systematic review and meta-analysis. *British Medical Journal*. 2012; 345:e4757. Correction published December 2012; 345:e8503.

² Wehner MR, Shive ML, Chren MM, Han J, Qureshi AA, Linos E. Indoor tanning and non-melanoma skin cancer: systematic review and meta-analysis. *BMJ*. 2012, 345:35909. doi: <http://dx.doi.org/10.1136/bmj.e5909>.

³ Lazovich D, Vogel RI, Weinstock MA, Nelson HH, Ahmed RL, Berwick M. Association between indoor tanning and melanoma in younger men and women. *JAMA Dermatol*. 2016; doi: 10.1001/jamadermatol.2015.2938.

⁴ Wehner MR, Chren MM, Nameth D, Choudhry A, Gaskins M, Nead KT, et al. International prevalence of indoor tanning: a systematic review and meta-analysis. *JAMA Dermatol*. 2014; 150(4): 390-400. doi: 10.1001/jamadermatol.2013.6896.

⁵ Guy GP, Watson M, Haileytes T, Annett JL. Indoor tanning-related injuries treated in a national sample of US hospital emergency departments. *JAMA Internal Medicine*. 2015; 175(2): 309-311.

⁶ El Ghissassi F, Bann R, Straif K, Grosse Y, Secretan B, Bouvard V, et al. A review of human carcinogens – part D: radiation. *Lancet Oncol*. 2009; 10(8):751-2.

⁷ American Cancer Society. *Cancer Facts & Figures 2017*. Atlanta, GA: American Cancer Society; 2017.

⁸ Eller MS, Maeda T, Magnoni C, Atwal D, Gilchrist BA. Enhancement of DNA repair in human skin cells by thymidine dinucleotides: evidence for a p53-mediated mammalian SOS response. *Proc Natl Acad Sci U S A*. 1997;94(23):12627-12632.

⁹ American Academy of Dermatology. Phototherapy versus indoor tanning.

¹⁰ National Institute of Arthritis and Musculoskeletal and Skin Diseases. Questions and answers about psoriasis. Published October 2013. Accessed May 10, 2016. http://www.niams.nih.gov/Health_Info/Psoriasis/default.asp.

¹¹ American Academy of Dermatology. Psoriasis: General principles for phototherapy. Accessed May 10, 2016. <https://www.aad.org/practice-tools/quality-care/clinical-guidelines/psoriasis/phototherapy-and-photochemotherapy>.

¹² American Cancer Society. *Cancer Prevention and Early Detection Facts and Figures 2015*. Atlanta: American Cancer Society; 2015.

¹³ U.S. Department of Health and Human Services. The Surgeon General's call to action to prevent skin cancer. Washington, D.C.: U.S. Dept of Health and Human Services, Office of the Surgeon General; 2014.

¹⁴ Dore JF, Chignol MC. Tanning salons and skin cancer. *Photobiol. Sci*. 2012; 11, 30-7.

¹⁵ National Toxicology Program U.S. Department of Health and Human Services. Scientific review of ultraviolet (UV) radiation, broad spectrum and UVA, UVB, and UVC. Updated November 5, 2014. Accessed May 13, 2016. <http://ntp.niehs.nih.gov/ntp/roc/content/profiles/ultravioletradiationrelatedexposures.pdf>.

¹⁶ NAACCR Fast Stats: An interactive tool for quick access to key NAACCR cancer statistics. North American Association of Central Cancer Registries. <http://www.naacr.org/>. (Accessed on 5-5-2016).

¹⁷ Guy GP, Berkowitz Z, Everett JS, Holman DM, Garnett E, Watson M. Trends in indoor tanning among US high school students, 2009-2013. *JAMA Dermatol*. 2015; 151(4):448-50.

¹⁸ Guy GP, Berkowitz Z, Holman DM, Hartman AM. Recent changes in the prevalence of and factors associated with frequency of indoor tanning among US adults. *JAMA Dermatol*. 2015; 151(11):1256-59.

¹⁹ Centers for Disease Control and Prevention (CDC). Youth Risk Behavior Surveillance-United States, 2015. *MMWR*. 2016; 65(6).

²⁰ Guy GP, Berkowitz Z, Watson M, Holman DM, Richardson LC. Indoor tanning among young non-Hispanic white females. *JAMA Intern Med*. 2013; 173(20):1920-22. doi: 10.1001/jamainternmed.2013.10013.

²¹ Hartman AM, Guy GP, Holman DM, Saraiya M, Plescia M. Use of indoor tanning devices by adults – United States, 2010. *MMWR*. 2012; 61(18):323-6.

²² Cokkinides V., Weinstock M., Lazovich D., Ward E., Thun M. Indoor tanning use among adolescents in the U.S., 1998-2004. *Cancer*. 2009; 115: 190-198.

²³ Lazovich D, Vogel RI, Berwick M, Weinstock MA, Anderson KE, Warshaw EM. Indoor tanning and risk of melanoma: a case-control study in a highly exposed population. *Cancer Epidemiol Biomarkers Prev*. 2010;19: 1557-1568.

²⁴ Guy GP, Watson M, Richardson LC, Lushniak BD. Reducing indoor tanning—an opportunity for melanoma prevention. *JAMA Dermatol*. 2016; doi: 10.1001/jamadermatol.2015.3007.

²⁵ U.S. House of Representatives Committee on Energy and Commerce Minority Staff. (2012, February 1). False and Misleading Information Provided to Teens by the Indoor Tanning Industry – Investigative Report.

²⁶ Forster JL, Lazovich D, Hickle A, Sorensen G, Demierre MF. Compliance with restrictions on sale of indoor tanning sessions to youth in Minnesota and Massachusetts. *J Am Acad Dermatol*. Dec 2006;55(6):962-967.

²⁷ Pichon LC, Mayer JA, Hoerster KD, et al. Youth access to artificial UV radiation exposure: practices of 3647 US indoor tanning facilities. *Arch Dermatol*. 2009;145: 997-1002.

²⁸ Guy GP, Berkowitz Z, Jones SE, Olsen E, Miyamoto JN, Michael SL, et al. State indoor tanning laws and adolescent indoor tanning. *Am J Public Health*. 2014; 104(4):e69-74.

²⁹ Mayer JA, Woodruff SI, Slymen DJ, et al. Adolescents' use of indoor tanning: a large-scale evaluation of psychosocial, environmental, and policy-level correlates. *Am J Public Health*. 2011; 101(5):930-8.

³⁰ Watson M, Holman DM, Fox KA, et al. Preventing skin cancer through reduction of indoor tanning: current evidence. *Am J Prev Med*. 2013;44: 682-689.

³¹ Hoerster KD, Mayer JA, Woodruff SI, Malcarne V, Roesch SC, Clapp E. The influence of parents and peers on adolescent indoor tanning behavior: findings from a multi-city sample. *J Am Acad Dermatol*. 2007; 57(6):990-7.

³² Cokkinides VE, Weinstock MA, O'Connell MC, Thun MJ. Use of indoor tanning sunlamps by U.S. youth, ages 11-18 years, and by their parent or guardian caregivers: prevalence and correlates. *Pediatrics*. 2002; 109(6):1009-14.

³³ Federal Register. General and plastic surgery devices: reclassification of ultraviolet lamps for tanning, henceforth to be known as sunlamp products and ultraviolet lamps intended for use in sunlamp products. Published June 2, 2014. Accessed March 10, 2016. <https://www.federalregister.gov/articles/2014/06/02/2014-12546/general-and-plastic-surgery-devices-reclassification-of-ultraviolet-lamps-for-tanning-henceforth-to>.

³⁴ United States of America Federal Trade Commission. (2010, May 13). In the Matter of Indoor Tanning Association, a corporation - Docket Number C-4290 Decision and Order. Available at ftc.gov/os/caselist/0823159/100519tanningdo.pdf.