

**Testimony of
the Connecticut Society of Eye Physicians
Connecticut ENT Society
Connecticut Urology Society
Given by Steven Thornquist, M.D.
In support of**

S.B. No. 54 (RAISED) An Act Concerning The Use Of Indoor Tanning Devices By Persons Under Eighteen Years Of Age.

Good Afternoon, Senator Gerrantana, Representative Ritter and other distinguished members of the Public Health Committee, for the record, my name is Steven Thornquist, M.D., I am a board certified pediatric ophthalmologist practicing in Trumbull CT and I am here representing many physicians in different **specialties supporting SB 54 AAC The Use of Indoor Tanning Devices by Persons Under Eighteen Years of Age.** My testimony is in support of earlier testimony you heard today by my colleague Phil Kerr, M.D. president of the CT Dermatologists and representative for both the American Academy of Dermatology and the Connecticut State Medical Society and to share with you a public announcement by some National health organizations with regard to the dangers of indoor tanning which provides additional information which I could not possibly give in my three minutes of verbal testimony. I will be happy to address any issues or take any questions by this committee as to the dangers to the eye of indoor tanning and UV rays if there are any. If not, I thank you for the opportunity to support this important piece of legislation and place these facts on record.

National health care organizations unite to warn the public about the dangers of indoor tanning

WASHINGTON, D.C. (May 3, 2011) –

In light of mounting scientific evidence showing that indoor tanning increases the risk for developing skin cancer, including melanoma, the deadliest form of skin cancer, a contingent of national health care organizations have joined together to highlight the dangers of indoor tanning. Physicians from these organizations are concerned about the impact of indoor tanning on the public's health, particularly young women. Joining together are the American Academy of Dermatology Association (AADA), American Academy of Pediatrics (AAP), **American Academy of Ophthalmology (AAO)**, American Cancer Society Cancer Action Network (ACS CAN), **American College of Physicians (ACP)**, American Congress of Obstetricians and Gynecologists (ACOG), **American Medical Association (AMA)**, **American Osteopathic Association (AOA)**, Melanoma Research Foundation (MRF), National Council on Skin Cancer Prevention (NCSCP) and The Skin Cancer Foundation (SCF).

The health care organizations held a congressional briefing to discuss the dangers of indoor tanning. Tanning beds are classified by the World Health Organization's (WHO) International Agency for Research on Cancer (IARC) as group 1 - carcinogenic to humans, the highest cancer risk category. The physicians' concerns stem from rising melanoma rates. In fact, melanoma, the deadliest form of skin cancer, is increasing faster in young women than in young men – and a major difference in behavior is that women are more likely to use indoor tanning beds. Nearly 70 percent of tanning salon patrons are Caucasian girls and women, primarily aged 16 to 29 years.

The AADA recently released results of a new survey that reviewed indoor tanning behavior in teen girls. While many teens and young adults – particularly females – acknowledge that indoor tanning is dangerous, they continue to tan indoors.

"In our recent survey, the majority (86 percent) of indoor tanners think using tanning beds can cause skin cancer, yet they still think that people look more attractive with a tan (87 percent)," said Ronald L. Moy, MD, FAAD, president of the AADA. "It is imperative that we reach out to our young people and correct this misconception that a tan is a sign of good health while reinforcing the message that a tan is the body's response to damage from ultraviolet light."

“Using tanning beds increases one’s risk for melanoma by 75 percent and melanoma is now the most common form of cancer for young adults 25-29 years old, and is **the second most common form of cancer for adolescents and young adults 15-29 years old,**” said Cecil B. Wilson, MD, president of the AMA.

“Pediatricians have been warning our young patients about the dangers of indoor tanning for years,” said O. Marion Burton, MD, FAAP, president of the AAP. “We are seeing rapidly increasing skin cancer rates, particularly for melanoma in young women, which adds further incentive to promote our message loud and clear: tanning beds are not safe for young people.”

“Promoting women’s health issues is central to our mission and we see the issue of indoor tanning as a growing problem, especially among young women,” said Richard N. Waldman, MD, president of the ACOG. “Most young women with melanoma are developing it on their torso, which may be the result of high-risk tanning behaviors such as indoor tanning.”

Studies also have demonstrated that exposure to UV radiation during indoor tanning can lead to eye damage. “The AAO is committed to educating people that the eyes are at risk from UV exposure during indoor tanning,” said Richard L. Abbott, MD, president of AAO. **“Tanning beds can produce UV levels up to 100 times what you would get from the sun, which can cause serious damage to the external and internal structures of the eye and eyelids.”**

As the number of diagnosed cases of skin cancer continues to increase – current estimates are that one in five Americans will develop skin cancer during his or her lifetime – prevention and early diagnosis of skin cancer remain important health messages for all health care organizations.

“Prevention is one of the most valuable tools that we have as physicians. We need to continue educating patients about the risks of indoor tanning and encouraging healthy decisions to help prevent skin cancer,” said Virginia L. Hood, MBBS, MPH, FACP, president of ACP.

“Everyone needs to take preventive steps to protect themselves from unnecessary ultraviolet exposure, including avoiding indoor tanning beds. The regulation of indoor tanning devices needs to be updated to reflect what we know about their carcinogenic effects,” said Christopher W. Hansen, president of ACS CAN.

“Approximately 75 percent of all skin cancer deaths are from melanoma” said Tim Turnham, PhD, executive director of the MRF. “In fact, one American dies from melanoma almost every hour and the Melanoma Research Foundation will continue to educate the public about the prevention, diagnosis and treatment of melanoma, and the need for a cure.”

“The damage caused by UV radiation from tanning beds is cumulative and often irreversible, and the earlier people start to tan, the higher their risk of developing skin cancer in their lifetimes,” said Perry Robins, MD, president of SCF.

“The AOA encourages the public to make healthy lifestyle choices, especially when it comes to their skin,” said Karen J. Nichols, DO, president of AOA. “And to be familiar enough with their skin to catch skin cancer early when it’s most treatable.”

“The five-year survival rate for people whose melanoma is detected and treated before it spreads to the lymph nodes is 98 percent,” said Sandra I. Read, MD, FAAD, co-chair of the NCSCP. “Everyone should perform regular self-exams and if you notice a mole that is different from others, or that changes, itches, or bleeds, you should make an appointment to see your physician as soon as possible.”

About the American Academy of Dermatology Association:

The American Academy of Dermatology (Academy), founded in 1938, is the largest, most influential, and most representative of all dermatologic associations. A sister organization to the Academy, the American Academy of Dermatology Association is the resource for government affairs, health policy and practice information for dermatologists, and plays a major role in formulating policies that can enhance the quality of dermatologic care. With a membership of more than 17,000 physicians worldwide, the Academy is committed to: advancing the diagnosis and medical, surgical, and cosmetic treatment of the skin, hair and nails; advocating high standards in clinical practice, education, and research in dermatology; and supporting and enhancing patient care for a lifetime of healthier skin. For more information, contact the Academy at (888) 462-DERM (3376) or www.aad.org.

About the American Academy of Pediatrics:

The American Academy of Pediatrics is an organization of 60,000 primary care pediatricians, pediatric medical subspecialists and pediatric surgical specialists dedicated to the health, safety and well being of infants, children, adolescents and young adults (www.aap.org). Follow the AAP on Twitter and Facebook.

About the American Academy of Ophthalmology:

The American Academy of Ophthalmology is the world's largest association of eye physicians and surgeons—Eye M.D.s—with more than 29,000 members worldwide. Eye health care is provided by the three "O's" – opticians, optometrists and ophthalmologists. It is the ophthalmologist, or Eye M.D., who can treat it all: eye diseases and injuries, and perform eye surgery. To find an Eye M.D. in your area, visit the Academy's Web site at www.aao.org.

About the American Cancer Society Cancer Action Network (ACS CAN):

ACS CAN, the nonprofit, nonpartisan advocacy affiliate of the American Cancer Society, supports evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. ACS CAN works to encourage elected officials and candidates to make cancer a top national priority. ACS CAN gives ordinary people extraordinary power to fight cancer with the training and tools they need to make their voices heard. For more information, visit www.acscan.org.

About the American College of Physicians:

The American College of Physicians is the largest medical specialty organization and the second-largest physician group in the United States. ACP members include 130,000 internal medicine physicians (internists), related subspecialists, and medical students. Internists specialize in the prevention, detection, and treatment of illness in adults. Follow ACP on Twitter and Facebook.

About the American Congress of Obstetricians and Gynecologists:

The American Congress of Obstetricians and Gynecologists (www.acog.org) is the nation's leading group of physicians providing health care for women. As a private, voluntary, nonprofit membership organization of approximately 55,000 members, the American Congress of Obstetricians and Gynecologists strongly advocates for quality health care for women, maintains the highest standards of clinical practice and continuing education of its members, promotes patient education, and increases awareness among its members and the public of the changing issues facing women's health care. Follow us on Twitter at www.twitter.com/acognews.

About the American Osteopathic Association:

The American Osteopathic Association (AOA) proudly represents its professional family of more than 70,000 osteopathic physicians (DOs); promotes public health; encourages scientific research; serves as the primary certifying body for DOs; is the accrediting agency for osteopathic medical schools; and has federal authority to accredit hospitals and other health care facilities. More information on DOs/osteopathic medicine can be found at www.osteopathic.org.

About Melanoma Research Foundation:

The Melanoma Research Foundation (MRF) is the largest independent, national organization devoted to melanoma in the United States. Committed to the support of medical research in finding effective treatments and eventually a cure for melanoma, the MRF also educates patients and physicians about prevention, diagnosis and the treatment of melanoma. The MRF is an active advocate for the melanoma community, helping to raise awareness of this disease and the need for a cure. The MRF's website is the premier source for melanoma information seekers. More information is available at <http://www.melanoma.org/>.

About the National Council on Skin Cancer Prevention:

The National Council on Skin Cancer Prevention is the united voice of 45 organizations, associations, and agencies dedicated to reducing skin cancer morbidity and mortality in the United States. The National Council members represent some of the nation's premier researchers, clinicians and advocates for melanoma and skin cancer prevention. To learn more about the National Council, visit: www.skincancerprevention.org.

About The Skin Cancer Foundation:

The Skin Cancer Foundation is the only global organization solely devoted to the prevention, early detection and treatment of skin cancer. The mission of the Foundation is to decrease the incidence of skin cancer through public and professional education and research. For more information, visit www.SkinCancer.org.

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U. S. HOUSE OF REPRESENTATIVES COMMITTEE ON ENERGY AND COMMERCE –
MINORITY STAFF

False and Misleading Health Information Provided to Teens by the Indoor Tanning Industry

Investigative Report

Prepared for Rep. Henry A. Waxman, Rep. Diana DeGette, Rep. Frank Pallone, Jr.,
Rep. Rosa L. DeLauro, and Rep. Carolyn Maloney

2/1/2012

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I. EXECUTIVE SUMMARY

The World Health Organization and the National Toxicology Program classify indoor tanning beds as a “known” human carcinogen. The American Academy of Pediatrics calls indoor tanning beds “generally unsafe for children” and, along with the American Academy of Dermatology Association, recommends a ban on their use by anyone under 18. Yet despite the mounting evidence of the dangers of indoor tanning, millions of young people use tanning salons each year – and this use is on the rise. The most frequent indoor tanners are young white females.

Rep. Henry A. Waxman, Ranking Member of the House Committee on Energy and Commerce, Rep. Diana DeGette, Ranking Member of the House Committee on Energy and Commerce Subcommittee on Oversight and Investigations, and Rep. Frank Pallone, Jr., Ranking Member of the House Committee on Energy and Commerce Subcommittee on Health, along with Reps. Rosa L. DeLauro and Carolyn Maloney, requested this investigation to determine if tanning salons are providing accurate information about cancer and other risks to teenage girls who purchase indoor tanning sessions. Committee investigators representing themselves as fair-skinned teenage girls contacted 300 tanning salons nationwide, including at least three in each state and the District of Columbia. The investigators asked each salon a series of questions about its policies and the risks and benefits of tanning. Committee investigators also reviewed the print and online advertising of tanning salons.

The vast majority of tanning salons contacted by Committee investigators provided false information about the serious risks of indoor tanning and made specious claims about the health benefits that indoor tanning provides. Specifically, Committee investigators found:

- **Nearly all salons denied the known risks of indoor tanning.** When asked whether tanning posed any health risks for fair-skinned teenage girls, 90% of the salons stated that indoor tanning did not pose a health risk. When asked about the specific risk of skin cancer, over half (51%) of the salons denied that indoor tanning would increase a fair-skinned teenager’s risk of developing skin cancer. Salons described the suggestion of a link between indoor tanning and skin cancer as “a big myth,” “rumor,” and “hype.”
- **Four out of five salons falsely claimed that indoor tanning is beneficial to a young person’s health.** Four out of five (78%) of the tanning salons claimed that indoor tanning would be beneficial to the health of a fair-skinned teenage girl. Several salons even said that tanning would prevent cancer. Other health benefits claimed by tanning salons included Vitamin D production, treatment of depression and low self-esteem, prevention of and treatment for arthritis, weight loss, prevention of osteoporosis, reduction of cellulite, “boost[ing] the immune system,” sleeping better, treating lupus, and improving symptoms of fibromyalgia.

- **Salons used many approaches to downplay the health risks of indoor tanning.** During their calls, Committee investigators representing themselves as fair-skinned teenage girls were told that young people are not at risk for developing skin cancer; that rising rates of skin cancer are linked to increased use of sunscreen; that government regulators had certified the safety of indoor tanning; and that “it’s got to be safe, or else they wouldn’t let us do it.” Salons also frequently referred the investigators to industry websites that downplay indoor tanning’s health risks and tout the practice’s alleged health benefits.
- **Tanning salons fail to follow FDA recommendations on tanning frequency.** The Food and Drug Administration recommends that indoor tanning be limited to no more than three visits in the first week. Despite this recommendation, three quarters of tanning salons reported that they would permit first-time customers to tan daily; several salon employees volunteered that their salons did not even require 24-hour intervals between tanning sessions.
- **Tanning salons target teenage girls in their advertisements.** The print and online advertising for tanning salons frequently target teenage and college-aged girls with student discounts and “prom,” “homecoming,” and “back-to-school” specials. These youth-oriented specials often feature “unlimited” tanning packages, allowing frequent — even daily — tanning, despite research showing that frequent indoor tanning significantly increases the likelihood that a woman will develop melanoma, the deadliest form of skin cancer, before she reaches 30 years of age.

II. BACKGROUND

A. The Growing Popularity of Indoor Tanning

Tanning salons first appeared in the U.S. in the 1970s. Their popularity grew slowly at first. By 1988, only 1% of American adults reported using indoor tanning facilities. But by 2007, that number had reached 27%.¹

Millions of young people use tanning salons each year — often without full knowledge of the risks of indoor tanning — and this use is on the rise. The most frequent indoor tanners are young white females. Researchers consistently find high rates of indoor tanning among white 16- to 18-year-old girls, with some studies reporting that as many as 40% of youth in this

¹ Denis K. Woo and Melody J. Eide, *Tanning Beds, Skin Cancer, and Vitamin D: An Examination of the Scientific Evidence and Public Health Implications*, Dermatologic Therapy (2010) (hereinafter, “*Tanning Beds, Skin Cancer, and Vitamin D*”).

demographic have used indoor tanning facilities.² Having a parent or guardian who has used indoor tanning in the last year is associated with a 70% increase in the likelihood that a young person will visit a tanning salon.³

Tanning salons tend to be concentrated in areas with more teenagers and young women aged 15 to 24.⁴ This proximity is itself associated with a 40% increase in likelihood of indoor tanning among teens.⁵

B. Cancer and Other Health Risks

Ultraviolet (UV) light is electromagnetic radiation with a wavelength longer than visible light but shorter than X-rays. Sunlight contains UV radiation and emits three bands of the UV spectrum: UVA, UVB, and UVC. Exposure to either UVA or UVB light can cause DNA damage that leads to carcinogenesis.⁶ The primary culprit in sunburn is UVB, and scientists once believed it to be the only carcinogenic part of the solar spectrum. Recent research, however, has confirmed that UVA exposure also contributes to development of skin cancer.⁷

Indoor tanning is a potent source of ultraviolet radiation, especially UVA. While many assume that the lamps in tanning beds contain less or similar amounts of light to that emitted by the sun, the UVA radiation emitted by these devices can be as much as 10 to 15 times more powerful than midday sunlight. Tanning lights also emit UVB radiation, although depending on the type of tanning device, the UVB emitted may be similar to or less powerful than the UVB emitted by the sun.

This radiation makes tanning beds dangerous. Medical research has identified indoor tanning as a cause of skin cancer, including melanoma, the deadliest form of the disease. The World Health Organization's International Agency for Research on Cancer (IARC) classifies tanning beds as a "Group 1" carcinogen, a category that also includes asbestos, arsenic, and

² *Id.*; Joni A. Mayer et al., *Adolescents' Use of Indoor Tanning: A Large-Scale Evaluation of Psychosocial, Environmental, and Policy-Level Correlates*, *American Journal of Public Health* (May 2011) (hereinafter, "*Adolescents' Use of Indoor Tanning*").

³ *See Adolescents' Use of Indoor Tanning.*

⁴ Vilma Cokkinides et al., *Indoor Tanning Use among Adolescents in the US, 1998 to 2004*, *Cancer* (Jan. 2009) (hereinafter, "*Indoor Tanning Use among Adolescents*").

⁵ *Indoor Tanning Use among Adolescents; Tanning Beds, Skin Cancer, and Vitamin D; Adolescents' Use of Indoor Tanning.*

⁶ Exposure to UVC is also carcinogenic, but UVC rays from the sun do not reach the earth's surface, so they do not present the same human health risks as UVA and UVB.

⁷ *See Tanning Beds, Skin Cancer, and Vitamin D.*

tobacco smoke.⁸ Similarly, the National Toxicology Program classifies tanning beds as “known to be human carcinogens.”⁹

The risk of melanoma is especially high for youth and young adults who engage in indoor tanning. According to the IARC, the melanoma risk is “increased by 75% when use of tanning devices starts before 30 years of age.”¹⁰ For those who report having undergone ten or more indoor tanning sessions in the first three decades of life, the risk of being diagnosed with melanoma before the age of 30 is six times higher than the risk for those who have never tanned indoors.¹¹ Scientists have found this risk to persist after controlling for sunburns and outdoor sunbathing habits of melanoma victims.¹² One recent study determined that for young people diagnosed with melanoma between the ages of 18 and 29 years old, “76% of melanomas were attributable to sunbed use.”¹³

Indoor tanning can cause “sunburn,” just like too much sun exposure. Nearly 60% of indoor tanners report experiencing burns after indoor tanning sessions, a major risk factor for melanoma.¹⁴ The risk of melanoma is highest for women reporting sunburns during adolescence.

Scientists have also documented a link between indoor tanning and other forms of skin cancer. Researchers have found that a single use of a tanning bed can increase one’s chance of acquiring basal cell carcinoma, even after controlling for a history of sunburns, sun exposure, and sunbathing.¹⁵ Recently published peer-reviewed research by scientists at the Yale Cancer

⁸ See International Agency for Research on Cancer, *Agents Classified by the IARC Monographs, Volumes 1-102* (available online at <http://monographs.iarc.fr/ENG/Classification/ClassificationsGroupOrder.pdf>) (visited Jan. 26, 2012).

⁹ U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, *Report on Carcinogens, 12th ed.: Exposure to Sunlamps or Sunbeds* (2011).

¹⁰ *Special Report: Policy, A Review of Human Carcinogens — Part D: Radiation*, *The Lancet* (Aug. 2009); see also *Tanning Beds, Skin Cancer, and Vitamin D*.

¹¹ Anne E. Cust et al., *Sunbed Use During Adolescence and Early Adulthood Is Associated with Increased Risk of Early-Onset Melanoma*, *International Journal of Cancer* (May 2011) (hereinafter, “*Sunbed Use During Adolescence and Early Adulthood*”).

¹² See Marit Bragelien Veirød et al., *A Prospective Study of Pigmentation, Sun Exposure, and Risk of Cutaneous Malignant Melanoma in Women*, *Journal of the National Cancer Institute* (Oct. 2003); J Westerdahl, *Risk of Cutaneous Malignant Melanoma in Relation to Use of Sunbeds: Further Evidence for UV-A Carcinogenicity*, *British Journal of Cancer* (2000).

¹³ See *Sunbed Use During Adolescence and Early Adulthood*.

¹⁴ See *Indoor Tanning Use among Adolescents*.

¹⁵ See *Tanning Beds, Skin Cancer, and Vitamin D*.

Center showed that young people who have ever tanned indoors see a 69% increase in risk for developing basal cell carcinoma before the age of 40. Approximately one in four of these cancers, and 43% of the basal cell carcinomas in young women, could be prevented if people never used indoor tanning beds.¹⁶ The IARC found a similar link between indoor tanning and squamous cell carcinomas.¹⁷ The risk associated with indoor tanning is especially high for people with fair skin.¹⁸

The increased popularity of indoor tanning has coincided with a sharp rise in skin cancer.¹⁹ Melanoma is now the most common form of cancer for white women between the ages of 15 and 29 years old. Since 1980, the rate of melanoma in this group has increased by 50%.²⁰ Non-melanoma skin cancers have also seen a dramatic rise; by 2007, about 13 million Americans had had at least one such cancer. According to peer-reviewed research published in the Archives of Dermatology, the rate of non-melanoma skin cancer in the U.S. is “reaching epidemic proportions.”²¹

In addition to increasing cancer risks, tanning can cause ocular damage, premature aging of the skin, and exacerbate other medical conditions.²²

There are no health benefits to indoor tanning that outweigh the risks associated with the practice. There is no “safe or moderate tan.” Even short exposure to tanning can cause DNA damage. While many indoor tanners report using tanning beds to develop a “base tan” to protect against sunburns, researchers have concluded that indoor tanning offers no effective sunburn protection.

The tanning industry frequently promotes the benefits of Vitamin D and its association with UV light as an advantage of indoor tanning. Peer-reviewed medical research, however, shows that indoor tanning is an ineffective source of Vitamin D promotion. Although exposure to UVB light can produce Vitamin D, those most at risk of Vitamin D deficiency — people with darker skin — photosynthesize less Vitamin D. Moreover, the amount of UVB emitted from

¹⁶ See Leah M. Ferrucci et al., *Indoor Tanning and Risk of Early-Onset Basal Cell Carcinoma*, *Journal of the American Academy of Dermatology* (Dec. 2011).

¹⁷ See *Tanning Beds, Skin Cancer, and Vitamin D*.

¹⁸ Rutao Cui et al., *Central Role of p53 in the Suntan Response and Pathologic Hyperpigmentation*, *Cell* (Mar. 2007) (hereinafter, “*Central Role of p53*”); *Tanning Beds, Skin Cancer, and Vitamin D*.

¹⁹ *Tanning Beds, Skin Cancer, and Vitamin D*.

²⁰ National Cancer Institute, *NCI Cancer Bulletin* (July 2008).

²¹ *Study Finds “Epidemic” of Skin Cancer*, ABC News (Mar. 2010).

²² See James M. Spencer and Rex A. Amonette, *Indoor Tanning: Risks, Benefits, and Future Trends*, *Journal of the American Academy of Dermatology* (1995).

tanning devices varies, with some popular devices emitting relatively low levels. For most individuals, five to thirty minutes of midday sun twice each week accompanied by a healthy diet provides sufficient Vitamin D. For those with Vitamin D deficiency, physicians recommend oral supplements rather than increased exposure to UV radiation.²³

C. Federal and State Regulation

Under the Federal Food, Drug, and Cosmetic Act (FDCA), the Food and Drug Administration currently regulates tanning beds as Class I medical devices, the most lightly regulated device category. Other medical products regulated as Class I devices include band-aids, rubber gloves, and tongue depressors. Class I devices are subject to limited federal oversight; they are supposed to be those devices that “present minimal potential harm” to the user.

Tanning beds are subject to FDA’s general controls for medical devices (including rules about good manufacturing practices, recordkeeping, reporting, adulteration, and misbranding) and performance standards specific to tanning beds.²⁴ These standards: (1) establish limits on a tanning bed’s irradiance emissions; (2) require a mechanism by which a user of the device may terminate the tanning session at any time; (3) mandate that tanning bed manufacturers include protective eyewear with their products when distributed; (4) mandate the presence of a timer on each tanning bed (though the regulations state explicitly that “[t]he timer requirements do not preclude a product from allowing a user to reset the timer”); and (5) require that all tanning beds include the following warning label:

DANGER--Ultraviolet radiation. Follow instructions. Avoid overexposure. As with natural sunlight, overexposure can cause eye and skin injury and allergic reactions. Repeated exposure may cause premature aging of the skin and skin cancer. WEAR PROTECTIVE EYEWEAR; FAILURE TO MAY RESULT IN SEVERE BURNS OR LONG-TERM INJURY TO THE EYES. Medications or cosmetics may increase your sensitivity to the ultraviolet radiation. Consult physician before using sunlamp if you are using medications or have a history of skin problems or believe yourself especially sensitive to sunlight. If you do not tan in the sun, you are unlikely to tan from the use of this product.²⁵

While FDA does not prescribe any particular limits on the frequency or duration of indoor tanning sessions, it has issued guidance to manufacturers on recommended exposure frequency during the first week of indoor tanning. FDA requires that manufacturers of tanning devices provide directions for a tanning device’s use to purchasers. These directions must include a recommended exposure schedule, and FDA guidance suggests that this schedule

²³ See *Tanning Beds, Skin Cancer, and Vitamin D*.

²⁴ 21 U.S.C. § 360c(a)(1)(B).

²⁵ 21 C.F.R. § 1040.20(c)-(d).

recommend no more than three tanning sessions in the first week of indoor tanning exposure.²⁶

FDA is presently considering a reclassification of tanning beds, potentially triggering more stringent protections. On March 25, 2010, the General and Plastic Surgery Devices Panel of FDA's Center for Devices and Radiological Health Advisory Committee met to review recent scientific literature on risks posed by indoor tanning and to recommend whether changes to the devices' classification or regulatory controls are needed. The panel considered a presentation by FDA staff and testimony from the medical community and tanning salon industry. Testifying on behalf of the American Academy of Pediatrics, Johns Hopkins University Professor of Pediatrics and Dermatology Bernard Cohen stated that "the Academy believes that tanning lamps are generally unsafe for children and calls on the Food and Drug Administration to regulate them as such." He said the American Academy of Pediatrics supports a ban on tanning by children and teenagers, testifying: "In order to safeguard children and adolescents from the dangers of unsafe ultraviolet radiation exposure, the American Academy of Pediatrics recommends a ban on the use of tanning devices by individuals under the age of 18, unless under the guidance of their physician."²⁷

The FDA advisory panel concluded unanimously that tanning beds should not be Class I medical devices, with panelists split as to whether they should be Class II devices or Class III devices, which are subject to the strictest FDA controls. A majority of the panel favored age restrictions for tanning bed use. The panel also recommended enhanced education, training, and testing of tanning bed operators and improved labeling of tanning beds. In the words of one physician on the panel, dermatologist Dr. Erin Walker, such revisions to current regulations must make clear the medical consensus that "there is no such thing as a safe tan."²⁸ The FDA is currently considering these recommendations.

Some states have responded to the growth in the tanning industry and the mounting medical evidence of a link between tanning and skin cancer with regulations limiting access to tanning beds by children and adolescents. Over 30 states have enacted legislation regulating indoor tanning by teens — most commonly, by requiring parental consent for use of a tanning bed.²⁹ Even in states with these restrictions, the effectiveness of the regulations remains a

²⁶ FDA, Consumer Health Information, *Indoor Tanning: The Risks of Ultraviolet Rays* (Nov. 2009).

²⁷ FDA, Transcript of General and Plastic Surgery Devices Panel Meeting (Mar. 25, 2010) (available online at <http://www.fda.gov/downloads/AdvisoryCommittees/CommitteesMeetingMaterials/MedicalDevices/MedicalDevicesAdvisoryCommittee/GeneralandPlasticSurgeryDevicesPanel/UCM210232.pdf>) (visited Jan. 26, 2012).

²⁸ *Id.*

²⁹ See *Indoor Tanning Use among Adolescents; Tanning Beds, Skin Cancer, and Vitamin D*. Over twenty states have enacted laws requiring parental permission for children who wish

concern. Studies of compliance with parental consent laws in Texas, North Carolina, and Minnesota and Massachusetts have found tanning salon compliance rates of 11%, 13%, and 19%, respectively.³⁰ Despite an increase over the last decade in states requiring some form of parental permission for indoor tanning, researchers have found no measurable decrease in indoor tanning among older adolescent girls.

California recently enacted legislation banning indoor tanning by children altogether.³¹ The law took effect on January 1, 2012. California is the first and only state to protect children via a ban on indoor tanning. The indoor tanning industry opposed California's ban, while the American Academy of Dermatology praised it, commending the state for "protecting youth from the dangers of indoor tanning."³²

III. PURPOSE AND METHODOLOGY

Ranking Members Waxman, DeGette, and Pallone, along with Reps. DeLauro and Maloney, requested that the Democratic Committee staff investigate how tanning salons communicate risks to teens who seek information about indoor tanning sessions. In response to this request, Committee staff investigators, including college students interning with the Committee, telephoned indoor tanning salons across the country representing themselves as fair-skinned 16-year-old girls considering purchasing indoor tanning sessions for the first time.

to purchase indoor tanning sessions, with the age at which this requirement expires varying from 15 to 18. *See, e.g.*, Ariz. Admin. Code R 12-1-1414 A2; Ark. Stat. Ann. § 20-27-2202; Conn. Gen. Stat. § 19a-232; Fla. Stat. Ann. tit. § 381.89; Ga. Code Ann. § 31-38-8; Ind. Code Ann. § 25-8.4-15, 16; Ky. Rev. Stat. § 217.922; La. Rev. Stat. Ann. § 40:2701-18; Md. Health Code Ann. § 20-106; Mass. Gen. Laws Ann. ch. 111 Pub. Health § 211; Mich. Comp. Laws Ann. § 333.13405; Minn. Stat. Ann. § 325H.08; Miss. Dept. of Health Regs. tit. 15 part III subpart 78 ch. 2; Ohio Admin. Code 4713-19-09(B); OAR 333-119-0090(2); R.I. Dept. of Health Rules and Regs. for the Registration of Tanning Facilities, Part III § 9.5; S.C. Code Ann. ch. 61 § 106-4.5; Tenn. Code Ann. § 68-117-104; Utah Code Ann. § 26-15-13; Va. Code § 59.1-310.3; Wyo. Enrolled Act 26. Several other states require parental permission for older adolescents and prohibit indoor tanning for very young children, typically under the age of 14. *See, e.g.*, Del. Code Ann. tit. 16 § 30D; Ill. Admin. Code tit. 77 § 795.190(c); 10-144 Maine Dept. of Human Servs. Ch. 223 12A(3)(f); N.H. Rev. Stat. Ann. § tit. XXX 313-A:31; N.J. Rev. Stat. § C.26:2D-82.1; N.Y. Pub. Health Law § 3555; N.C. Gen. Stat. § 104E-9.1; N.D. Cent. Code § 23-39; Tex. Health and Safety Code Ann. § 145.008. Wisconsin has banned indoor tanning for those under 16, but has no parental consent requirements for older children. Wis. Code Ann. § 255.08(9)(a).

³⁰ *See Indoor Tanning Use among Adolescents in the US; Tanning Beds, Skin Cancer, and Vitamin D.*

³¹ Cal. Bus. and Prof. Code §§ 22706, 2241.3.

³² *See California Bans Indoor Tanning for Minors*, N.Y. Times (Oct. 10, 2011).

Committee investigators spoke with employees at 300 indoor tanning salons nationwide, including at least three salons in all 50 states and the District of Columbia.

On calls with salons, investigators asked: (1) whether the salon offered discounts to students or teens; (2) how frequently a new customer would be permitted to use the salon's tanning beds; (3) whether indoor tanning posed any risks for people with fair skin; (4) whether indoor tanning increased one's risk of acquiring skin cancer; and (5) whether indoor tanning provided any health benefits. When salons referred callers to information provided on a website, investigative staff reviewed these materials.

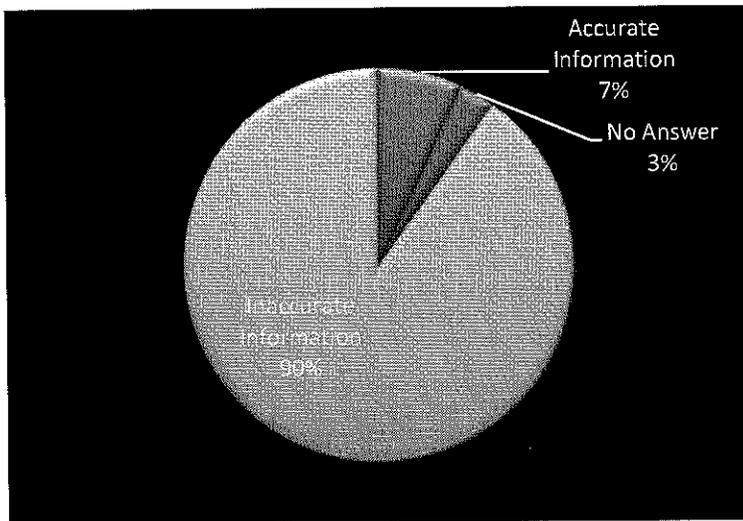
Committee staff also collected and reviewed advertising and promotional material created by indoor tanning salons. In particular, staff reviewed tanning salon websites, Facebook pages and posts for and by tanning salons, and print advertising.

IV. FINDINGS

A. Tanning Salons Provided False Information about the Health Risks of Indoor Tanning

The vast majority of the 300 tanning salons contacted by Committee staff provided inaccurate and misleading information about the health risks of indoor tanning. When Committee staff representing themselves as fair-skinned 16-year-old girls asked tanning salons whether indoor tanning would present any health risks, 90% of the salons reported that it presented no risk and only 7% reported that risks were present. The remaining 3% of salons did not provide clear answers about health risks.

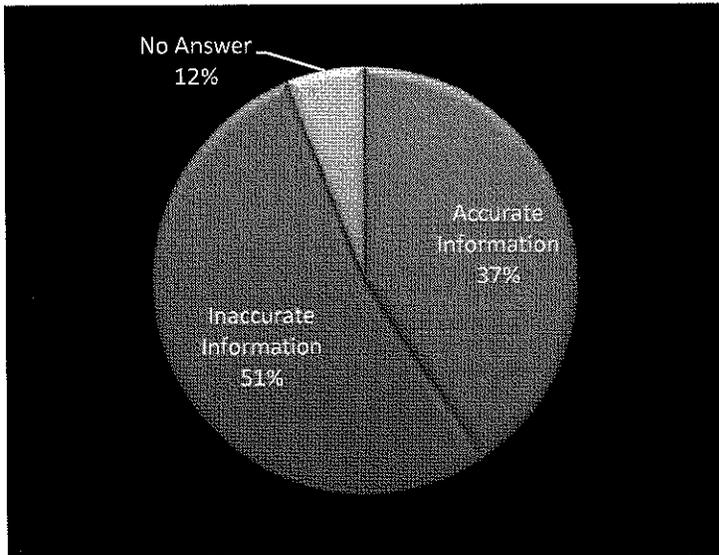
Figure 1:
90% of Salons Provided Inaccurate Information about Tanning Risks



When Committee investigators pressed salons about the specific threat of skin cancer, the majority of tanning salons provided information that was inaccurate and misleading. More than half (51%) of the 300 salons claimed that indoor tanning would not increase a young, fair-skinned person's risk of developing skin cancer. "No, no, no — that's not true whatsoever," insisted one salon employee. "Tanning

beds do not cause melanoma," another assured Committee staff. Others described cancer risks as "a big myth," "rumor," and "hype" that had not been "proven." "People who are meant to get skin cancer are just going to get skin cancer," one employee explained. "We wouldn't offer it if we thought it caused cancer," stated another.

Figure 2:
51% of Salons Denied a Link between Indoor Tanning and Skin Cancer



Even salons that accurately reported skin cancer risks misleadingly described those risks. One equated the skin cancer risk associated with indoor tanning as similar to that posed by the sunlight absorbed while "walking to your car." Another compared the risk of cancer from indoor tanning to that presented by "standing in front of the microwave" oven.

Several salons provided misleading advice about who is at risk for skin cancer.

Employees at two salons told investigators representing themselves as 16-year-olds that skin cancer from indoor tanning is only a concern for "for an old person" or "older people." Another suggested that use of sunscreen could actually increase one's risk for skin cancer, explaining that "skin cancer rates increased when sunscreen started being promoted."

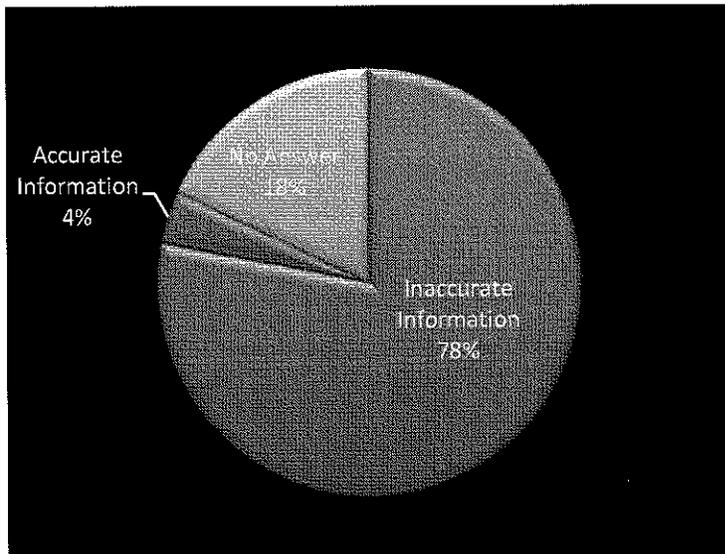
In discussing cancer risks, some salons pointed to the regulatory environment for indoor tanning as evidence of a lack of risk. These salons suggested that the current state of regulation amounted to confirmation of the practice's safety, telling Committee investigators: "If it was incredibly bad for you, you wouldn't be allowed to do it"; "It's got to be safe, or else they wouldn't let us do it"; "you can get skin cancer from being outside . . . but our [tanning] beds are certified and regulated"; and "the FDA wouldn't approve tanning salons if it weren't safe."

Salons also provided false information about skin damage and the risk of burns that might occur in a fair-skinned, first-time indoor tanner. Several suggested that indoor tanning is significantly less risky than casual exposure to natural sunlight. Others were unconcerned about skin damage from any source. One suggested that "aggressive tanning" is necessary when trying to build a tan in a fair person. Another told the caller that fair-skinned clients "just have to get that burning out of the way."

B. Tanning Salons Provided Inaccurate or Misleading Information about Health Benefits of Indoor Tanning

Tanning salons frequently claimed that indoor tanning would be beneficial to the health of teenagers, despite medical consensus to the contrary. Overall, 78% of the salons reached by Committee staff claimed that indoor tanning would provide health benefits. "Tanning is very good for you," one salon employee volunteered.

Figure 3:
78% of Salons Claimed Indoor Tanning Is Beneficial to Health



The most common benefit claimed by salons was promotion of Vitamin D production, with 60% of salons asserting that indoor tanning would be a good source of Vitamin D. Physicians do not recommend indoor tanning as a source of Vitamin D, however. Those most at risk of Vitamin D deficiency are least likely to increase Vitamin D levels through tanning because they typically have darker skin. Moreover, the level of UVB radiation from tanning devices,

which is what can produce Vitamin D, can vary considerably, with several popular devices emitting relatively low levels that would not contribute significantly to Vitamin D production.

Employees at eleven salons claimed that indoor tanning would prevent cancer. One named skin cancer, breast cancer, colon cancer, and prostate cancer as diseases that could be prevented through use of tanning beds.

Other health benefits mentioned by salons contacted by Committee staff include treatment of depression and low self-esteem, treatment for acne, prevention of and treatment for arthritis, weight loss, prevention of osteoporosis, "skin tightening," reduction of cellulite, "boost[ing] the immune system," improved sleeping, treating lupus, and improving symptoms of fibromyalgia.

C. Tanning Salons Regularly Disregarded FDA Safety Recommendations

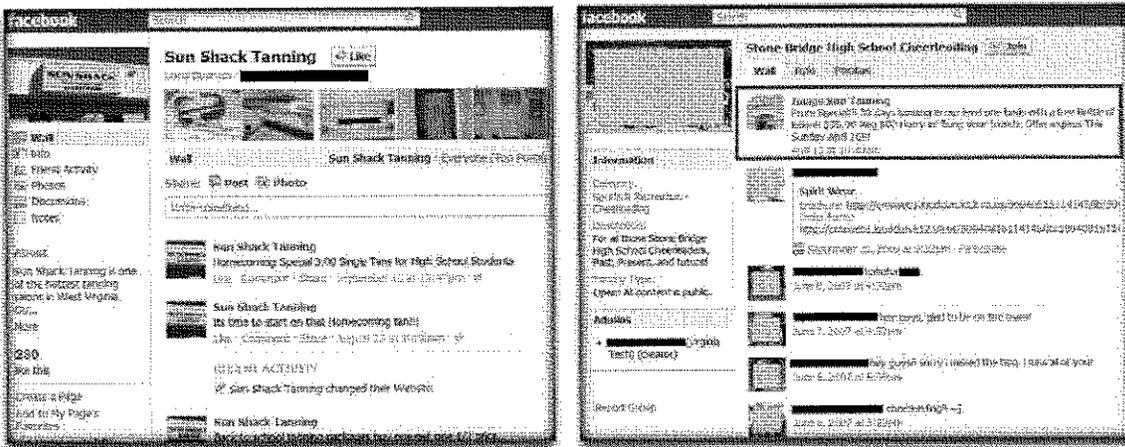
Three quarters of tanning salons did not follow FDA recommendations on tanning frequency. The FDA recommends that indoor tanning be limited to no more than three visits in

the first week. Despite this recommendation, 74% of the salons that Committee staff contacted stated that they would permit first-time, fair-skinned teenage girls to tan daily, and four salon employees volunteered that their salons did not require 24-hour intervals between tanning sessions.

D. Tanning Salons Targeted the Teen Market in Advertisements

The tanning salons contacted by Committee investigators frequently targeted youth in their marketing promotions. Among the tanning salons contacted by Committee investigators, over half (52%) offered discounts to students or teens.

Committee investigators reviewed over one hundred tanning salon websites and newspaper advertisements and found that “prom,” “homecoming,” and “back-to-school” specials are common. “It’s time to start on that Homecoming tan!!!” states a typical advertisement. Committee investigators also found that tanning salons are active users of social media, with many maintaining Facebook pages and Twitter accounts. Salons post notices about discounts on their own social media sites and also on Facebook pages for student groups, such as cheerleading squads.



The most common discounts offered to young people in the advertising materials reviewed by Committee staff were reduced rates on “unlimited” tanning packages, which allow customers to visit a salon as often as they wish in a particular period of time (typically, one month). This type of discounting raises concern because, while any use of indoor tanning increases skin cancer risks, frequent tanning sessions significantly increase the chance of acquiring melanoma.

E. Tanning Industry Websites Provide Misleading Information

When presented with requests for health information about indoor tanning, tanning salons frequently directed investigators to tanning industry websites that create a misleading picture of the risks and benefits of indoor tanning. Most commonly, they suggested that teens curious about the health impact of indoor tanning visit www.tanningtruth.com or www.smarttan.com. Both sites are associated with the "International Smart Tan Network," a tanning industry trade association. The sites downplay the cancer risk associated with indoor tanning and tout the practice's alleged health benefits.

Visitors to www.tanningtruth.com see a series of large-print pro-tanning statements running across the top of the screen while navigating the website. The statements begin with an assertion that “[s]aying sunlight is harmful and therefore we should avoid it is as misleading as saying that water causes drowning, and therefore we should avoid it.” Statements that follow suggest that medical advice about the use of sunscreen and avoidance of indoor tanning is driven by the profit motives of pharmaceutical companies and dermatologists.

The website’s discussion of the health impacts of tanning present a different picture than that provided by peer-reviewed medical research. Under a tab labeled “What are the real risks of indoor tanning?” the industry website questions the link between indoor tanning and melanoma, saying that “the relationship between melanoma and ultraviolet light remains unclear.” Under a tab labeled “Are there any benefits to indoor tanning?” the trade association claims that tanning is “nature’s sunscreen,” treats cosmetic skin conditions, and promotes Vitamin D production. The site then suggests that indoor tanners produce a “sufficient” level of Vitamin D, “non-tanners” produce a “deficient” level, and dermatologists experience a “severe deficiency” of Vitamin D.

The other industry website, www.smarttan.com, also provides misleading information about Vitamin D and tanning. On this website, salon operators may purchase “D-Angel” training, which “teaches [salon] employees why Smart Tanning is vindicated and why they should spread the truth about UV and Vitamin D to their friends and family.” It provides a link to a website for the “Vitamin D Council,” which suggests that Vitamin D promotion yields a host of health benefits, including prevention of cancer, heart disease, diabetes, autism, multiple sclerosis, chronic digestive diseases, food allergies, and tuberculosis, as well as treatment for lupus.

V. CONCLUSION

Indoor tanning significantly increases skin cancer risks and presents a number of other significant health concerns. These risks are particularly acute for teenagers and young adults. Indoor tanning salons, however, regularly deny these risks. When Committee investigators contacted 300 tanning salons to ask about the risks indoor tanning posed to fair-skinned teenage girls, the vast majority of salons denied that indoor tanning increases health risks.

The dangers to teenage girls are exacerbated by tanning industry practices. Committee investigators found that the marketing practices of tanning salons target teenagers and young adults, often offering back-to-school, homecoming, and prom promotions.



American Academy of Dermatology Association

Excellence in Dermatology™

PROTECT TEENS FROM THE DANGERS OF INDOOR TANNING BY SUPPORTING LEGISLATION TO PROHIBIT THE USE OF TANNING DEVICES BY MINORS

Help Educate Your State's Residents and Protect the Health of its Youth

- Throughout US history, state and federal legislatures have consistently used legislation to educate the public and protect our youth from various health hazards.
- The American Academy of Dermatology Association and the American Academy of Pediatrics, along with the World Health Organization, support policies to prohibit the use of tanning devices by minors under the age of 18.
- Use of indoor tanning beds increases with each year of adolescence. Indoor tanning rates among 14-, 15-, 16-, and 17-year-old girls in the past year are 8.5%, 13.6%, 20.9%, and 26.8%, respectively.ⁱ

Indoor Tanning Devices Present a Significant Health Hazard

- Use of tanning devices early in life is linked to increased risk of melanoma, the deadliest form of skin cancer, later in life.ⁱⁱ
- UV radiation from tanning devices is classified as "carcinogenic to humans."ⁱⁱⁱ
- Tanning devices have UV radiation levels that *far exceed* what is found in natural sunlight and have a different ratio of UVA to UVB.^{iv}

Indoor Tanning Causes Melanoma and Non-Melanoma Skin Cancers

- A person who has used tanning devices for more than 50 hours, 100 sessions, or 10 or more years is 2.5 to 3 times more likely to develop melanoma than a person who has never tanned indoors.^v
- Among those who had ever used a tanning bed and were diagnosed between 18 and 29 years of age, 76% of melanomas were attributable to indoor tanning.^{vi}
- Ever-indoor tanning was associated with a 69% increased risk of early-onset basal cell carcinoma (BCC), the most common form of skin cancer. Risk was higher in those who begin indoor tanning at earlier ages (less than 16 years old).^{vii}
- Indoor tanners are 2.5 times more likely to develop squamous cell carcinoma than non-indoor tanners.^{viii}

The Increase of Skin Cancer Comes at a Very High Cost

- According to the National Cancer Institute, the estimated total direct cost associated with the treatment of melanoma in 2010 was \$2.36 billion.^{ix}

There is No Such Thing As a "Safe" Tan

- A tan is evidence of skin damage; hence, there is no "safe tan."^x
- Proponents of indoor tanning argue it is a good source of vitamin D. This is a false and misleading claim. Vitamin D is produced in the body through exposure to UVB rays. To minimize burning, modern indoor tanning devices emit predominantly UVA rays, and do not emit enough UVB rays to provide an efficient source of vitamin D.^{xi}
- Tanning is addictive. Research has shown that 41% of frequent indoor tanners met criteria consistent with a tanning addictive disorder and an additional 33% met criteria for problematic tanning behavior.^{xii}

**DESPITE ALL OF THESE SCIENTIFIC FACTS,
THE PUBLIC REMAINS MOSTLY UNAWARE OF THE DANGERS OF TANNING**

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Latest Research Linking Indoor Tanning Use to Development of Skin Cancer/Melanoma

UVA-1 Induces Cyclobutane Pyrimidine Dimers but Not 6-4 Photoproducts in Human Skin In Vivo

Tewari A, Sarkany RP, Young AR.

Published on October 6, 2011 in the Journal of Investigative Dermatology

- UVA-1 may be more carcinogenic than has been thought previously. It was demonstrated for the first time in humans (human buttock skin) that exposure to UVA radiation, just like UVB, from indoor tanning beds can damage skin cells.
- This study also found that UVA penetrates deeper into the skin and causes DNA mutations and damage which are difficult to repair, and are precursors to the development of cancer.
- These results are also supported by previous studies in mice and human skin grown in a Petri dish.
- 97 to 99% of UV radiation emitted by the indoor tanning beds in commercial salons is UVA.

Activation of the mesostriatal reward pathway with exposure to ultraviolet radiation (UVR) vs. sham UVR in frequent tanners: a pilot study

Harrington CR, Beswick TC, Graves M, Jacobe HT, Harris TS, Kourosh S, Devous Sr MD, Adinoff B.

Published on April 11, 2011 in Addiction Biology

- A small-randomized blinded study showed that there was an increase of blood flow to certain parts of the brain, which is associated with the pleasure function, when exposed to UV radiation from commercial indoor tanning devices.
- These and previous findings strongly suggest that indoor tanning involves the central nervous system (CNS reward mechanisms) which encourages repeat tanning.
- Harrington and colleagues utilized a modified CAGE questionnaire to assess behaviors associated with problem tanning.
- 41% of subjects met criteria consistent with a tanning addictive disorder, and an additional 33% met criteria for problematic tanning behavior.
- Early age of first tanning was associated with meeting tanning addiction criteria, and female participants in the study were found to have a higher rate of tanning addictive disorders than male participants.
- Therefore, in addition to the risk of skin cancer, frequent, intentional exposure to ultraviolet (UV) light from indoor tanning devices may induce a compulsive desire to tan, despite the knowledge of negative consequences.

Indoor tanning and risk of melanoma: a case-control study in a highly exposed population

DeAnn Lazovich, Rachel Isaksson Vogel, Marianne Berwick, Martin A. Weinstock, Kristin E. Anderson, and Erin M. Warshaw

Published in May 2010 in Cancer Epidemiology, Biomarkers and Prevention

- Using data from the statewide cancer registry, age-matched and gender-matched controls were randomly selected from state driver's license lists. Self-administered questionnaires and

telephone interviews included information on ever-use of indoor tanning, types of device used, initiation age, period of use, dose, duration, and indoor tanning-related burns.

- Using multiple logistic regression, odds ratios and 95% confidence intervals were adjusted for known melanoma risk factors.
- Study population was 1,167 people; control population was 1,101 people.
- Skin, hair and eye color, and presence and pattern of freckles and moles were collected via self-administered questionnaires. Education, income, family history, all sun exposure measures, history and number of painful sunburns before and after age 18, and sunscreen use were collected during telephone interviews.
- Lifetime routine sun exposure was calculated using the instrument developed by Krickler et al.
- The multivariate-adjusted odds ratio for the likelihood of melanoma in relation to having ever tanned indoors was 1.74. Melanoma risk increased markedly with frequency of use.
- Adjusted odds ratios ranged between approximately 2.5 and 3.0 for the highest category of use – 50+ hours, more than 100 sessions, or 10 or more years of use.

Sunbed use during adolescence and early adulthood is associated with increased risk of early-onset melanoma

Anne E. Cust, Bruce K. Armstrong, Chris Goumas, Mark A. Jenkins, Helen Schmid, John L. Hopper, Richard F. Kefford, Graham G. Giles, Joanne F. Aitken, and Graham J. Mann

Published in 2010 the International Journal of Cancer

- From the Australian Melanoma Family Study, a multi-center, population-based, case-control study, researchers analyzed data for 604 cases of melanoma diagnosed between the ages of 18 and 39, against 479 controls.
- Data were collected between January 2001 and December 2005 by a trained interview and relative risk of melanoma associated with sunbed use was estimated as odds ratios using unconditional logistic regression, adjusting for age, sex, city, education, family history, skin color, usual skin response to sunlight, and sun exposure.
 - To improve recall, cases and controls were asked to complete before the interview a lifetime calendar in which they indicated, for each year of life, their place of residence, place of work or study, number of days spent at work or study each week in warmer months and in cooler months, and holiday locations.
 - Participants also reported their skin, eye color, natural hair color at age 18, usual tanning and sunburn response to prolonged or repeated exposure of skin to sunlight, the number of moles covering the body, freckling, and were asked to have someone count the number of moles on their back.
- Among those who had never used a sunbed and were diagnosed with melanoma between the ages of 18 and 29, 76 percent of melanomas were attributable to sunbed use.
- Indoor tanning is associated with increased risk of early-onset melanoma, with risk increasing with greater use, an earlier age at first use and for earlier onset disease.

Indoor tanning and risk of early-onset basal cell carcinoma

Leah M. Ferrucci, PhD, Brenda Cartmel, PhD, Annette M. Molinaro, PhD, David J. Leffell, MD, Allen E. Bale, MD, and Susan T. Mayne, PhD

Published online, December 8, 2011, in the Journal of the American Academy of Dermatology

- Ever-indoor tanning was associated with a 69 percent increased risk of early-onset basal cell carcinoma (BCC); association was stronger among females, those with multiple BCCs, and for BCCs on the trunk and extremities. Risk increased with earlier age of tanning onset (younger than 16 years).
- The Yale Study of Skin Health in Young People is a case-control study of early-onset BCC (conducted July 2007 – December 2010).
- Patients with BCC (n=376) and control subjects with minor benign skin conditions (n=390) who were younger than 40 years old provided information on ever indoor tanning, age of initiation, frequency, duration, burns while tanning, and type of tanning device through an in-person interview.
- Odds ratios and 95% confidence intervals were calculated using multivariate logistic regression.
- Inclusion of the following exposures did not significantly alter risk estimates: education, eye color, hair color, moles 5mm or larger on back, freckles on face, body mass index, regular use of sunscreen, alcohol consumption, smoking status, incidental outdoor sun exposure, outdoor activities, sunburns, sunbathing sessions, and outdoor employment.

A Melanoma Epidemic in Iceland: Possible Influence of Sunbed Use

Clarisse Hery, Laufey Tryggvadottir, Thorgeir Sigurdsson, Elinborg Olafsdottir, Bardur Sigurgeirsson, Jon G. Jonasson, Jon H. Olafsson, Mathieu Boniol, Graham B. Byrnes, Jean-Francois Dore, and Phillipe Autier

Published September 2, 2010 in the American Journal of Epidemiology

- Data from the population-based Icelandic Cancer Registry on melanoma incidence from 1955 to 2007. Trends in incidence were analyzed by stratifying gender, age and anatomic site of melanoma.
- Data on sunbed numbers provided by the Icelandic Radiation Protection Institute; additional data on use from surveys of melanoma risk factors in the Icelandic population from 2001-2002.
- Ecological designed study: data compared at the population level rather than the individual level.
- Ecological correlation does not imply causation, but researchers found that sunbed use likely played an important role in affecting the melanoma incidence trends observed in Iceland.

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