- Original Article
- Published: June 2002

The sick building syndrome: What is it when it is?

- Yuhjung John Tsai MD[1] &
- M. Eric Gershwin MD[1]

Comprehensive Therapy **volume 28**, pages140–144(2002)Cite this article

Abstract

Sick building syndrome is a commonly applied diagnosis; often abused and misinterpreted to denote headaches, dizziness, fatigue and eye irritation associated with a building

References

1. 1.

   Lyles WB, Greve KW, Bauer RM, et al. Sick building syndrome. *Southern Med J.* 1991;84:65–71.

   CAS PubMed Google Scholar

2. 2.

Ruhl RA, Chang CC, Halpern GM, Gershwin ME. The sick building syndrome. II. Assessment and regulation of indoor air quality. *J Asthma*. 1993;30:297–295.

PubMed CAS Google Scholar

3. 3.

Skov P, Valbjorn O. Danish outside climate study group. The sick building syndrome in the office environment: The Danish Town Hall study. *Environ Int.* 1987;13:339–347.

Article CAS Google Scholar

4. 4.

Norback D, Torgen M, Edling C. Volatile organic compounds, respiratory dust and personal factors related to the prevalence and incidence of SBS in primary schools. *Br J Indust Med.* 1990;47:733–741.

CAS Google Scholar

5. 5.

Fenstersheib MD, Miller M, Diggins C., et al. Outbreak of Pontiac fever due to *Legionella anisa*. *Lancet*. 1990;336:35–37.

PubMed Article CAS Google Scholar

6. 6.

Banaszak EF, Thiede WH, Fink JN. Hypersensitivity pneumonitis due to contamination of an air conditioner. *N Engl J Med.* 1970;283:271–276.

PubMed CAS Article Google Scholar

7. 7.

Ganier M, Lieberman P, Fink JN, Lockwood DG. Humidifier lung: an outbreak in office workers. *Chest*. 1980;77:183–187.

PubMed CAS Google Scholar

8. 8.

Novey HS. Environmental control of the workplace. *Clin Rev Allergy*. 1988;6:45–60.

PubMed CAS Google Scholar

9. 9.

Brooks BO, Utter GM, DeBroy JA, Shimke RD. Indoor air pollution: an edifice complex. *Clin Toxicol.* 1991;29:315–374.

CAS Article Google Scholar

10. 10.

O'Sullivan PE. Modern architectural design for healthy buildings and occupants. In: Bergland B, Lindvall T, eds. *State of the Art Reviews*. Vol. 1. Stockholm; Swedish Council for Building Research, Healthy

Buildings 88: 1988:15–17.

Google Scholar

11. 11.

Grammer LC, Harris KE, Shaughnessy MA, et al. Clinical and immunologic evaluation of 37 workers exposed to gaseous formaldehyde. *J Allergy Clin Immunol.* 1990;86:177–181.

PubMed Article CAS Google Scholar

12. 12.

Quinlan P, Macker JM, Alevantis LE, Cone JE. Protocol for the comprehensive evaluation of building-associated illness. *Occup Med.* 1990;4:771–776.

Google Scholar

13. 13.

Rylander R, Haglind P, Lundholm M, Mattsby I, Stenqvist K. Humidifier fever and endotoxin exposure. *Clin Allergy*. 1978;8:511–516.

PubMed Article CAS Google Scholar

14. 14.

Update: Pulmonary hemorrhage/hemosiderosis among infants-Cleveland, Ohio, 1993–1996. *MMWR Morb Mortal Wkly Rep.* 1997;46:33–35.

15. 15.

From the Centers for Disease Control and Prevention. Update: pulmonary hemorrhage/hemosiderosis among infants-Cleveland, Ohio, 1993–1996. *JAMA*. 2000;283:1951–1953.

Article Google Scholar

16. 16.

Mason CD, Rand TG, Oulton M, MacDonald JM, Scott JE. Effects of *Stachybotrys chartarum (atra) conidia* and isolated toxin on lung surfactant production and homeostasis. *Natural Toxins*. 1998;6:27–33.

PubMed Article CAS Google Scholar

17. 17.

Nikulin M, Reijula K, Jarvis BB, Hintikka EL. Experimental lung mycotoxicosis in mice induced by *Stachybotrys atra*. *Int J Exp Pathol.* 1996;77:213–218.

PubMed Article CAS Google Scholar

18. 18.

Croft WA, Jarvis BB, Yatawara CS. Airborne outbreak of trichothecene toxicosis. *Atmosph Environ.* 1986;20:549–552.

Article Google Scholar

19. 19.

Fung F, Clark R, Williams S. *Stachybotrys*, a mycotoxin-producing fungus of increasing toxicologic importance [See Comments]. *J Toxicol Clin Toxicol.* 1998;36:79–86.

PubMed CAS Article Google Scholar

20. 20.

Johanning E, Biagini R, Hull D, Morey P, Jarvis B, Landsbergis P. Health and immunology study following exposure to toxigenic fungi (*Stachybotrys chartarum*) in a water-damaged office environment. *Int Arch Occup Environ Health*. 1996;68:207–218.

PubMed CAS Google Scholar

21. 21.

Hodgson MJ, Morey P, Leung WY, et al. Building-associated pulmonary disease from exposure to *Stachybotrys chartarum* and *Aspergillus versicolor*. *J Occup Environ Med.* 1998;40:241–249.

PubMed Article CAS Google Scholar

22. 22.

Ooi PL, Goh KT. Sick building syndrome: an emerging stress-related disorder? *Int J of Epid.* 1997;26:1243–1249.

Article CAS Google Scholar

23. 23.

Toxic effects of indoor molds. American Academy of Pediatrics. Committee on Environmental Health. *Pediatrics*. 1998;101:712–714.

Google Scholar

24. 24.

Mahmoudi M, Gershwin ME. Sick Building Syndrome. III. *Stachybotrys chartarum*. *J Asthma*. 2000;37:191–198.

PubMed CAS Google Scholar

Download references

Author information

Affiliations

1. Department of Internal Medicine Division of Rheumatology, Allergy, and Clinical Immunology, University of California at Davis School of Medicine, TB 192. One Shields Avenue, 95616, Davis, CA, USA
    - Yuhjung John Tsai MD
    - & M. Eric Gershwin MD

Authors

1. Yuhjung John Tsai MD
   View author publications
   You can also search for this author in
   - PubMed
   - Google Scholar
2. M. Eric Gershwin MD
   View author publications
   You can also search for this author in
   - PubMed
   - Google Scholar

Corresponding author

Correspondence to M. Eric Gershwin MD.

Additional information

The authors have stated that they do not have a significant financial interest or other relationship with any product manufacturer or provider of services discussed in this article.

About this article

Cite this article

Tsai, Y.J., Gershwin, M.E. The sick building syndrome: What is it when it is?. *Compr Ther* **28,** 140–144 (2002). https://doi.org/10.1007/s12019-002-0052-6

Download citation

- Received: 26 September 2001
- Accepted: 26 November 2001
- Issue Date: June 2002
- DOI: https://doi.org/10.1007/s12019-002-0052-6

Keywords

- Volatile Organic Compound
- Allergic Rhinitis
- Hypersensitivity Pneumonitis
- Comp THER
- Mucous Membrane Irritation

- Sections
- References

- Abstract
- References

- Author information
- Additional information
- About this article

1. Lyles WB, Greve KW, Bauer RM, et al. Sick building syndrome. *Southern Med J.* 1991;84:65–71.
    - CAS
    - PubMed
    - Google Scholar
2. Ruhl RA, Chang CC, Halpern GM, Gershwin ME. The sick building syndrome. II. Assessment and regulation of indoor air quality. *J Asthma*. 1993;30:297–295.
    - PubMed
    - CAS
    - Google Scholar
3. Skov P, Valbjorn O. Danish outside climate study group. The sick building syndrome in the office environment: The Danish Town Hall study. *Environ Int.* 1987;13:339–347.
    - Article
    - CAS
    - Google Scholar
4. Norback D, Torgen M, Edling C. Volatile organic compounds, respiratory dust and personal factors related to the prevalence and incidence of SBS in primary schools. *Br J Indust Med.* 1990;47:733–741.
    - CAS
    - Google Scholar
5. Fenstersheib MD, Miller M, Diggins C., et al. Outbreak of Pontiac fever due to *Legionella anisa*. *Lancet*. 1990;336:35–37.
    - PubMed
    - Article
    - CAS
    - Google Scholar

6. Banaszak EF, Thiede WH, Fink JN. Hypersensitivity pneumonitis due to contamination of an air conditioner. *N Engl J Med.* 1970;283:271–276.

   - PubMed
   - CAS
   - Article
   - Google Scholar

7. Ganier M, Lieberman P, Fink JN, Lockwood DG. Humidifier lung: an outbreak in office workers. *Chest*. 1980;77:183–187.

   - PubMed
   - CAS
   - Google Scholar

8. Novey HS. Environmental control of the workplace. *Clin Rev Allergy*. 1988;6:45–60.

   - PubMed
   - CAS
   - Google Scholar

9. Brooks BO, Utter GM, DeBroy JA, Shimke RD. Indoor air pollution: an edifice complex. *Clin Toxicol.* 1991;29:315–374.

   - CAS
   - Article
   - Google Scholar

10. O'Sullivan PE. Modern architectural design for healthy buildings and occupants. In: Bergland B, Lindvall T, eds. *State of the Art Reviews*. Vol. 1. Stockholm; Swedish Council for Building Research, Healthy Buildings 88: 1988:15–17.

    - Google Scholar

11. Grammer LC, Harris KE, Shaughnessy MA, et al. Clinical and immunologic evaluation of 37 workers exposed to gaseous formaldehyde. *J Allergy Clin Immunol.* 1990;86:177–181.

    - PubMed
    - Article
    - CAS
    - Google Scholar

12. Quinlan P, Macker JM, Alevantis LE, Cone JE. Protocol for the comprehensive evaluation of building-associated illness. *Occup Med.* 1990;4:771–776.

    - Google Scholar

13. Rylander R, Haglind P, Lundholm M, Mattsby I, Stenqvist K. Humidifier fever and endotoxin exposure. *Clin Allergy*. 1978;8:511–516.

    - PubMed
    - Article
    - CAS
    - Google Scholar

14. Update: Pulmonary hemorrhage/hemosiderosis among infants-Cleveland, Ohio, 1993–1996. *MMWR Morb Mortal Wkly Rep.* 1997;46:33–35.

15. From the Centers for Disease Control and Prevention. Update: pulmonary hemorrhage/hemosiderosis among infants-Cleveland, Ohio, 1993–1996. *JAMA*. 2000;283:1951–1953.

    - Article
    - Google Scholar

16. Mason CD, Rand TG, Oulton M, MacDonald JM, Scott JE. Effects of *Stachybotrys chartarum (atra) conidia* and isolated toxin on lung surfactant production and homeostasis. *Natural Toxins*. 1998;6:27–33.

    - PubMed
    - Article
    - CAS
    - Google Scholar

17. Nikulin M, Reijula K, Jarvis BB, Hintikka EL. Experimental lung mycotoxicosis in mice induced by *Stachybotrys atra*. *Int J Exp Pathol.* 1996;77:213–218.

    - PubMed
    - Article
    - CAS
    - Google Scholar

18. Croft WA, Jarvis BB, Yatawara CS. Airborne outbreak of trichothecene toxicosis. *Atmosph Environ.* 1986;20:549–552.

    - Article
    - Google Scholar

19. Fung F, Clark R, Williams S. *Stachybotrys*, a mycotoxin-producing fungus of increasing toxicologic importance [See Comments]. *J Toxicol Clin Toxicol.* 1998;36:79–86.

    - PubMed
    - CAS
    - Article
    - Google Scholar

20. Johanning E, Biagini R, Hull D, Morey P, Jarvis B, Landsbergis P. Health and immunology study following exposure to toxigenic fungi (*Stachybotrys chartarum*) in a water-damaged office environment. *Int Arch Occup Environ Health*. 1996;68:207–218.

    - PubMed
    - CAS
    - Google Scholar

21. Hodgson MJ, Morey P, Leung WY, et al. Building-associated pulmonary disease from exposure to *Stachybotrys chartarum* and *Aspergillus versicolor*. *J Occup Environ Med.* 1998;40:241–249.

    - PubMed
    - Article
    - CAS
    - Google Scholar

22. Ooi PL, Goh KT. Sick building syndrome: an emerging stress-related disorder? *Int J of Epid.* 1997;26:1243–1249.

    - Article
    - CAS
    - Google Scholar

23. Toxic effects of indoor molds. American Academy of Pediatrics. Committee on Environmental Health. *Pediatrics*. 1998;101:712–714.

    - Google Scholar

24. Mahmoudi M, Gershwin ME. Sick Building Syndrome. III. *Stachybotrys chartarum*. *J Asthma*. 2000;37:191–198.

    - PubMed
    - CAS
    - Google Scholar