

WORK SCHEDULES: SHIFT WORK AND LONG WORK HOURS



According to 2004 data from the Bureau of Labor Statistics, almost 15 million Americans work full time on evening shift, night shift, rotating shifts, or other employer arranged irregular schedules. The International Labour Office in 2003 reports that working hours in the United States exceed Japan and most of western Europe. Both shift work and long work hours have been associated with health and safety risks. This page provides links to NIOSH publications and other resources that address demanding work schedules.

NIOSH TIC-2 Search

NIOSH TIC-2 (<http://www2a.cdc.gov/nioshtic-2/>) is a searchable bibliographic database of occupational safety and health publications, documents, grant reports, and journal articles supported in whole or in part by NIOSH.

NIOSH TIC-2 search results on work schedules (<http://www2a.cdc.gov/nioshtic-2/BuildOvr.asp?>

[s1=%22shift+work%22+or+shiftwork+or+overtime+or+%22work+schedule%22+or+%22work+interval%22+or+%22long+work+hours%22+or+%22extended+work+shift%22+or+%22s](#)

NIOSH Publications and Guidance

NIOSH Interim Guidance for Protecting Deepwater Horizon Response Workers - Fatigue Prevention (</niosh/topics/oilspillresponse/protecting/general.html#fatigue>)

Overtime and Extended Work Shifts: Recent Findings on Illnesses, Injuries and Health Behaviors (<http://wwwdev.niosh.cdc.gov/niosh/docs/2004-143/>)

DHHS (NIOSH) Publication No. 2004-143

Presents a review of the methods and findings from 52 studies that examined the relationship between long work hours and selected health outcomes. Also provides recommendations on issues and priorities to consider in future research.

Medical Interns' Risk for Car Crashes Linked With Extended Shifts in NIOSH-Funded Study—NIOSH Update (<http://www.cdc.gov/niosh/updates/upd-01-13-05.html>)

Information on this study can be found in the following journal articles in the *New England Journal of Medicine*:

- Barger LK, Cade BE, Ayas NT, Cronin JW, Rosner B, Speizer FE, Czeisler CA. 2005. Extended Work Shifts and the Risk of Motor Vehicle Crashes among Interns. *N Engl J Med* 352:125-134.
- Landrigan CP, Rothschild JM, Cronin JW, Kaushal R, Burdick E, Katz JT, Lilly CM, Stone PH, Lockley SW, Bates DW, Czeisler CA. 2004. Effect of reducing interns' work hours on serious medical errors in intensive care units. *N Engl J Med* 351:1838-1848.
- Lockley SW, Cronin JW, Evans EE, Cade BE, Lee CJ, Landrigan CP, Rothschild JM, Katz JT, Lilly CM, Stone PH, Aeschbach D, Czeisler CA. 2004. Effect of reducing interns' weekly work hours on sleep and attentional failures. *N Engl J Med* 351:1829-1837.

Work-related Roadway Crashes - Prevention Strategies for Employers

(<http://www.cdc.gov/niosh/docs/2004-136/>)

DHHS (NIOSH) Publication No. 2004-136

Work-related Roadway Crashes - Who's at Risk? (<http://www.cdc.gov/niosh/docs/2004-137/default.html>)

DHHS (NIOSH) Publication No. 2004-137


Companion fact sheets provide information that employers and others can use for assessing risks for motor vehicle injuries and deaths in their work settings, and for taking effective steps to reduce those risks.

Work-Related Roadway Crashes - Challenges and Opportunities for Prevention

(<http://www.cdc.gov/niosh/docs/2003-119/>)

DHHS (NIOSH) Publication No. 2003-119

Provides a comprehensive view of issues impacting the prevention of work-related roadway crashes, identifies the groups of workers at greatest risk of traffic crashes, summarizes key issues that contribute to work-related roadway crashes, and recommends preventive measures for employers and other stakeholders.

Plain Language About Shiftwork  (<http://www.cdc.gov/niosh/pdfs/97-145.pdf>) [PDF - 572KB]

DHHS (NIOSH) Publication No. 1997-145

Provides basic facts about shiftwork and talks about ways to make shiftwork life easier. The document is an educational document for the general public.

Conferences

20th International Symposium on Shiftwork and Working Time - Biological mechanisms and risk management in the 24h society

June 28 – July 1, 2011

Stockholm • Sweden

www.stressresearch.se (<http://www.stressresearch.se/>)

The International Symposium on Shiftwork and Working Times is a biannual event. This symposium has a tradition of more than 30 years in providing up-to-date information on night and shiftwork, as well as new trends in working time organization. The Symposium is organized by members of the Working Time Society, and of the Scientific Committee on Shiftwork and Working Time of the International Commission on Occupational Health (ICOH). The 20th International Symposium on Shiftwork and Working Time (<http://www.shiftwork2011.se>) is organized by the Stress Research Institute, Stockholm University, Stockholm, Sweden.

Past NIOSH-Sponsored Events

Long Working Hours, Safety, And Health: Toward A National Research Agenda

(<http://nursing.umaryland.edu/events/archives/longworkhours/index.html>)

April 29 - 30, 2004, University of Maryland, Baltimore, Maryland

Using a multi-disciplinary approach, this conference explored the sociological, economic, and health dimensions of long work hours.

- Extended Abstracts from Conference Presentations:
 - Filling the Workware Warehouse: What to Store with Regard to Long Work Hours (<abstracts/tepas.html>)
 - Industry Trends, Costs and Management of Long Working Hours (<abstracts/dawson.html>)
 - Modelling the Impact of the Components of Long Work Hours on Injuries and "Accidents" (<abstracts/folkard.html>)
 - Organized Labor's Response to Long Work Hours (<abstracts/kojola.html>)
 - Overtime, Occupational Stress, and Related Health Outcomes: A Labor Perspective (<abstracts/legrande.html>)
 - Work Hours as a Predictor of Stress Outcomes (<abstracts/barnett.html>)
 - Working in a 24/7 Economy: Challenges for American Families (<abstracts/presser.html>)
- Conference Papers
 - Long working hours, occupational health and the changing nature of work organization. Johnson JV, Lipscomb J. *American Journal of Industrial Medicine*. 2006; 49: 921-929.
 - Long working hours, safety, and health: Toward a national research agenda. Caruso CC, Bushnell T, Eggerth D, Heitmann A, Kojola B, Newman K, Rosa RR, Sauter SL, Vila B. *American Journal of Industrial Medicine*. 2006; 49: 930-942.
 - Long hours of work in the U.S.: Associations with demographic and organizational characteristics, psychosocial working conditions, and health. Grosch JW, Caruso CC, Rosa RR, Sauter SL. *American Journal of Industrial Medicine*. 2006; 49: 943-952.
 - Modeling the impact of the components of long work hours on injuries and accidents. Folkard S, Lombardi DA. *American Journal of Industrial Medicine*. 2006; 49: 953-963.
 - Longitudinal relationship of work hours, mandatory overtime, and on-call to musculoskeletal problems in nurses. Trinkoff AM, Le R, Geiger-Brown J, Lipscomb J, Lang G. *American Journal of Industrial Medicine*. 2006; 49: 964-971.
 - Impact of long work hours on police officers and the communities they serve. Vila B. *American Journal of Industrial Medicine*. 2006; 49: 972-980.

Some Strategies Suggested for Coping with Shift Work

Measures to counteract the negative effects of night work. Pallesen S, Bjorvatn B, Mageroy N, Saksvik IB, Waage S, Moen BE. *Scan J Work Environ Health* 2010. 36 (2): 109-120.

Eating and shift work – effects on habits, metabolism and performance. Lowden A, Moreno C, Holmbäck U, Lennernäs M, Tucker P. *Scan J Work Environ Health* 2010. 36 (2): 150-162.

Fatigue countermeasures in aviation. Caldwell JA, Mallis MM, Caldwell JL, Paul MA, Miller JC, Neri DF; Aerospace Medical Association Fatigue Countermeasures Subcommittee of the Aerospace Human Factors Committee. *Aviat Space Environ Med* 2009. 80(1):29-59

Alertness Management Strategies for Operational Contexts

Caldwell JA, Caldwell JL, Schmidt RM. *Sleep Medicine Reviews* 2008; 12: 257-273

Circadian rhythm sleep disorders: Part 1, basic principles, shift work and jet lag disorders. Sack RL, Auckley D, Auger RR, Carskadon MA, Wright KP, Vitiello MV, Zhdanova I. *Sleep* 2007; 30:1460-1483.

Practice parameters for the clinical evaluation and treatment of circadian rhythm sleep disorders. Morgenthaler TI, Lee-Chiong T, Alessi C, Friedman L, Aurora RN, Boehlecke B, Brown T, Chesson AL, Kapur V, Maganti R, Owens J, Pancer J, Swick TJ, Zak R. *Sleep* 2007; 30:1445-1459.

How to trick Mother Nature into letting you fly around or stay up all night

(<http://www2a.cdc.gov/nioshtic-2/BuildOvr.asp?>

[s1=20028904+&f1=*&Adv=0&terms=1&View=e&n=new&Startyear=&EndYear=&Limit=10000&sort=&D1=10](http://www2a.cdc.gov/nioshtic-2/BuildOvr.asp?))

Revell VL, Eastman CI. *Journal of Biological Rhythms* 2005; 20:353-365

Preventive and compensatory measures for shift workers

Knauth P, Hornberger S. *Occupational Medicine* (<http://ocmed.oxfordjournals.org/>) (Ox) 2003;

53:109-116.

Plain Language About Shiftwork


DHHS (NIOSH) Publication No. 1997-145  (/niosh/pdfs/97-145.pdf) [PDF - 572 KB]


Some Educational Resources For Workers Available on Other Web Sites

[National Sleep Foundation](http://www.sleepfoundation.org)  (<http://www.sleepfoundation.org>)

- [Shift work and sleep](http://www.sleepfoundation.org/article/sleep-topics/shift-work-and-sleep)  (<http://www.sleepfoundation.org/article/sleep-topics/shift-work-and-sleep>)
- [Healthy sleep tips](http://www.sleepfoundation.org/article/sleep-topics/healthy-sleep-tips)  (<http://www.sleepfoundation.org/article/sleep-topics/healthy-sleep-tips>)
- [Sleep drive and your body clock](http://www.sleepfoundation.org/article/sleep-topics/sleep-drive-and-your-body-clock)  (<http://www.sleepfoundation.org/article/sleep-topics/sleep-drive-and-your-body-clock>)

[National Institute of Health, National Heart, Blood, and Lung Institute](#)

[Your Guide to Healthy Sleep](#). NIH Publication Number 06-5271. 2006. 60 pages  (http://www.nhlbi.nih.gov/health/public/sleep/healthy_sleep.htm)

[Working the night shift: preparation, survival and recovery](#). Horrocks, N & Pounder, R. 2006. London, Royal College of Physicians. 24 pages  (<http://www.rcplondon.ac.uk/pubs/books/nightshift/index.asp>)

NORA Organization of Work Research Priority Area


The goal of the [NORA Organization of Work Team](http://www.cdc.gov/niosh/programs/workorg/) (<http://www.cdc.gov/niosh/programs/workorg/>) is


to define and implement a national occupational research agenda for the next decade.

Organization of work refers to management and supervisory practices and production processes, and to their influence on the way jobs are designed and performed in the workplace. Organization of work includes the design of work schedules. A NORA Long Work Hours Subteam was formed to address overtime and extended work shifts issues.


Other Resources

[CDC: Sleep and Sleep Disorders](http://www.cdc.gov/sleep/) (<http://www.cdc.gov/sleep/>)

[Agency for Healthcare Research and Quality](http://www.ahrq.gov/)  (<http://www.ahrq.gov/>)


[National Institutes for Health, National Center for Sleep Disorders Research](http://www.nhlbi.nih.gov/about/ncsdr/index.htm)  (<http://www.nhlbi.nih.gov/about/ncsdr/index.htm>)

[National Sleep Foundation](http://www.sleepfoundation.org/)  (<http://www.sleepfoundation.org/>)

[Sleep Research Society](http://www.sleepresearchsociety.org)  (<http://www.sleepresearchsociety.org>)


[Society for Light Treatment and Biological Rhythms](http://www.sltbr.org/)  (<http://www.sltbr.org/>)

[Society for Research on Biological Rhythms](http://www.srbr.org/)  (<http://www.srbr.org/>)

[Working Time Society](http://www.workingtime.org/)  (<http://www.workingtime.org/>)

Extramural Research Projects

Search for extramural government funded studies examining work schedules:

- [Search](http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen)  (http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen)
 - Suggested search terms: **hour, research, occupational, work**
 - Global logic field: select "**and**"
 - Expansion logic field: select "**stem**"
 - Institutes and Centers field: select **ALL**
- More information may also be found at the [NIOSH Office of Extramural Programs Web site](http://niosh/oepl/) ([/niosh/oepl/](http://niosh/oepl/))

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