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HEALTH: STUDY: WORK HAZARDS

Special glasses may cut perils of the night shift

Lens coating blocks light wavelengths associated with hormone disruptions

MARTIN MITTELSTAEDT

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Shift work exacts a huge toll, leading to punishing sleep disruptions and an elevated risk of illnesses that range from breast cancer to heart disease.

Although the reasons for the adverse health effects are currently unknown, some researchers say the graveyard shift has at least one unique hazard: It exposes people to large amounts of light at night, a time when humans are supposed to be shrouded in darkness.

Exposure to a light bulb may not seem like much of a danger, but a growing body of research is indicating that nocturnal light has profound biological effects. Among the most worrisome discoveries is that exposure to light at night can disrupt levels of several critical hormones. That includes cutting the amount of melatonin, which slows cancer growth, and increasing the amount of cortisol, a stress hormone.

**But medical researchers in Toronto think they have devised a simple way to spare North America's estimated 13 million night-shift workers from some of the fluctuating hormone levels and disruptions to the body's internal clock.
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The Globe and Mail**

They've developed a coating for use on spectacles that blocks the wavelengths of light responsible for the hormone alternations. They believe that wearing the glasses will allow workers to maintain reasonably normal hormones levels at night, making it easier for their bodies to cope with those shifts.

"All the adverse health effects [from light] are actually related to a very narrow band of wavelengths," said Robert Casper, a senior investigator at the Samuel Lunenfeld Research Institute in Toronto who led the team of scientists that developed the lens coating.

Dr. Casper said the finding on wavelengths was the key to the lenses. It isn't the brightness of light at night that is a problem, he said, but specific wavelengths in the

blue part of the spectrum. This blue light can play havoc with a person's hormones if it enters the eyes.

The treated lenses look much like normal glasses, but with a yellowish tint. People peering through them for the first time will see things with a slight yellowish hue, Dr. Casper said, but they quickly get used to it.

"Once you wear them for a while, you can actually distinguish colours pretty well. If anything, they almost increase the contrast, the sharpness of objects at night," he said.

The innovation is viewed as so promising that the Ontario government is helping to fund the commercialization of the spectacles. Dr. Casper estimates they will cost between \$100 and \$150 a pair and will be available later this year. Dr. Casper is also supported by the Canadian Institutes of Health Research, which announced the development of the lens earlier this week.

The coating can be applied to prescription glasses and to non-corrective glasses for those who wear contact lenses or don't normally wear glasses. The researchers tested the lenses on a group of University of Toronto students during an experiment of simulated night-shift work. They found that those wearing the glasses didn't experience the wild hormonal disruptions typically caused by nocturnal light exposure.

As a further pilot project, the research team plans to have a group of night-shift workers at a Canadian Auto Workers plant try them, as well as nurses at Toronto Western Hospital. The nurses and autoworkers will be checked to see if the glasses improve their alertness and mood, two factors that often diminish as a consequence of night work. Researchers will also be trying to see if the glasses ease the transition to normal nighttime sleeping during weekends or when people switch to a day shift.

Dr. Casper says that based on the testing to date, those who view themselves as having morning-type personalities had a larger percentage improvement in alertness after wearing the glasses, indicating that this group might be the biggest beneficiaries.

About 60 per cent of the population are considered to have morning personalities, meaning they function better early in the day than in the late afternoon or evening.

The lenses are getting a strong endorsement from Salima Mawani, a shift-working nurse at a Kitchener hospital who has been using them since September.

Ms. Mawani, a patient of Dr. Casper, said she's noticed a big difference in the restfulness of her sleep. She's been wearing the glasses from about 10 p.m. to 6:30 a.m. on her night shifts. Before she tried the glasses, it had taken her two days to return to normal after shifts.

"When I wear these glasses, I wake up as if I actually had slept well," she said, adding that other nurses working with her also want to try them.

"They all want to get a pair," said Ms. Mawani, who has worked nights for 10 years. "I would definitely recommend these glasses. Honestly, they've made a world of difference for me, my function level."

The health risk posed by night shifts was highlighted in late 2007, when the United Nations' International Agency for Research on Cancer placed shift work that involves circadian disruption on its list of possible carcinogens. Most of the other items on the list are chemical pollutants.