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noise pollution

noise pollution, human-created noise harmful to health or welfare. Transportation vehicles are the worst offenders, with aircraft, railroad stock, trucks, buses, automobiles, and motorcycles all producing excessive noise. Construction equipment, e.g., jackhammers and bulldozers, also produce substantial noise pollution.

Noise intensity is measured in decibel units. The decibel scale is logarithmic; each 10-decibel increase represents a tenfold increase in noise intensity. Human perception of loudness also conforms to a logarithmic scale; a 10-decibel increase is perceived as roughly a doubling of loudness. Thus, 30 decibels is 10 times more intense than 20 decibels and sounds twice as loud; 40 decibels is 100 times more intense than 20 and sounds 4 times as loud; 80 decibels is 1 million times more intense than 20 and sounds 64 times as loud. Distance diminishes the effective decibel level reaching the ear. Thus, moderate auto traffic at a distance of 100 ft (30 m) rates about 50 decibels. To a driver with a car window open or a pedestrian on the sidewalk, the same traffic rates about 70 decibels; that is, it sounds 4 times louder. At a distance of 2,000 ft (600 m), the noise of a jet takeoff reaches about 110 decibels—approximately the same as an automobile horn only 3 ft (1 m) away.

Subjected to 45 decibels of noise, the average person cannot sleep. At 120 decibels the ear registers pain, but hearing damage begins at a much lower level, about 85 decibels. The duration of the exposure is also important. There is evidence that among young Americans hearing sensitivity is decreasing year by year because of exposure to noise, including excessively amplified music. Apart from hearing loss, such noise can cause lack of sleep, irritability, heartburn, indigestion, ulcers, high blood pressure, and possibly heart disease. One burst of noise, as from a passing truck, is known to alter endocrine, neurological, and cardiovascular functions in many individuals; prolonged or frequent exposure to such noise tends to make the physiological disturbances chronic. In addition, noise-induced stress creates severe tension in daily living and contributes to mental illness.

Noise is recognized as a controllable pollutant that can yield to abatement technology. In the United States the Noise Control Act of 1972 empowered the Environmental Protection Agency to determine the limits of noise required to protect public health and welfare; to set

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NPC Noise Pollution Clearinghouse

About Noise, Noise Pollution, and the Clearinghouse

The word "noise" is derived from the Latin word "nausea," meaning seasickness. Noise is among the most pervasive pollutants today. Noise from road traffic, jet planes, jet skis, garbage trucks, construction equipment, manufacturing processes, lawn mowers, leaf blowers, and boom boxes, to name a few, are among the audible litter that are routinely broadcast into the air.

Noise negatively affects human health and well-being. Problems related to noise include hearing loss, stress, high blood pressure, sleep loss, distraction and lost productivity, and a general reduction in the quality of life and opportunities for tranquillity.

We experience noise in a number of ways. On some occasions, we can be both the cause and the victim of noise, such as when we are operating noisy appliances or equipment. There are also instances when we experience noise generated by others just as people experience second-hand smoke. While in both instances, noises are equally damaging, second-hand noise is more troubling because it has negative impacts on us but is put into the environment by others, without our consent.

The air into which second-hand noise is emitted and on which it travels is a "commons," a public good. It belongs to no one person or group, but to everyone. People, businesses, and organizations, therefore, do not have unlimited rights to broadcast noise as they please, as if the effects of noise were limited only to their private property. On the contrary, they have an obligation to use the commons in ways that are compatible with or do not detract from other uses.

People, businesses, and organizations that disregard the obligation to not interfere with others' use and enjoyment of the commons by producing noise pollution are, in many ways, acting like a bully in a school yard. Although perhaps unknowingly, they nevertheless disregard the rights of others and claim for themselves rights that are not theirs.

We have organized to raise awareness of noise pollution and help communities take back the commons from those acting like bullies. Our efforts include building a library of resources and tools concerning noise pollution, establishing links to other groups that have similar collections, establishing networks among local noise activists, assisting communities and activists who are working to reduce noise pollution, and monitoring and advocating for stronger noise controls.

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Sleep Deprivation Effects

The consequences of sleep deprivation include physical effects, mental impairment, and mental health complications. Inadequate rest impairs our ability to think, to handle stress, to maintain a healthy immune system, and to moderate our emotions. Total sleep deprivation is fatal: lab rats denied the chance to rest die within two to three weeks.

Mental Functioning

Without adequate rest, the brain's ability to function quickly deteriorates. The brain works harder to counteract sleep deprivation effects, but operates less effectively: concentration levels drop, and memory becomes impaired. Speech becomes slurred and fragmented, and mental reaction time slows.

The brain's ability to problem solve is greatly impaired: decision-making abilities are compromised, and the brain falls into rigid thought patterns that make it difficult to generate new problem-solving ideas. Insufficient rest can also cause people to have hallucinations.

Mental Health: Stress, Anxiety, and Mood

Without sufficient rest, emotional mood deteriorates. People become irritable and short-tempered, both with themselves and others. Loss of emotional control is possible, leading to emotional outbursts and even violence.

Stress and anxiety levels both rise as a result of sleepiness, which often begins a vicious circle. Insomnia and fatigue leads to stress and anxiety. Stress and anxiety are leading causes of insomnia. Left unchecked, this cycle can result in full-blown anxiety disorders and depression.

Physical Responses

Insomnia makes it difficult to focus the eyes properly, or to perform fine motor functions as effectively as when well rested. Muscle strength and endurance drops, in part due to lowered glucose metabolism. Appetite tends to increase with insufficient rest, leading to weight gain for some people.

Sleep Deprivation Effects and ADHD

Sleeping problems exacerbate ADHD symptoms in many children. Indeed, symptoms such as irritability, impulse control and concentration difficulties are shared by both ADHD and insomnia. A sudden worsening of ADHD symptoms may indicate a problem with sleeping patterns.

Personal Costs

Lack of sleep causes more than physical health problems. The moodiness and irritability that accompany chronic sleepiness affect job performance and personal relationships. Interpersonal conflicts become more common, causing stress that can further interfere with normal rest patterns.

The Dangers of Long Term Sleep Loss

Everyone has the occasional sleepless night. However, long-term sleep deprivation studies suggest that chronic insomnia increases the risk of a number of health problems, and heightens the likelihood of accidents.

Driver Fatigue

According to the National Highway Traffic Safety Administration, over 100,000 automobile accidents a year are caused by driver fatigue: a number that includes over 1,550 dead and 71,000 injured. Accidents caused by tired drivers may actually be much higher: determining whether fatigue played a role in a crash is difficult.

The fewer hours of rest you get, the greater your chances are of being the cause of a car accident. Young adults, parents of small children, and shift workers are among the highest risk groups for driver fatigue. You stand the highest chance of falling asleep at the wheel on long highways while traveling at high speeds.

Research studies have concluded that driving while sleepy is as detrimental as driving drunk. According to researchers in Australia and New Zealand, people who went seventeen to nineteen hours without sleep operated their vehicles worse than people with blood alcohol levels of greater than 0.05 percent—the legal limit in most western European countries. Most of the US has a legal limit of 0.1 percent, with a few states at 0.08 percent.

Impaired Glucose Tolerance

Sleep deprivation studies at the University of Chicago discovered that sleeping shortages quickly alter the body's ability to regulate glucose and produce insulin, mimicking the symptoms of impaired glucose tolerance. After a week of sleep deprivation, otherwise healthy test subjects took forty percent longer than normal to regulate blood sugar levels. Both insulin production and the body's response to insulin fell to thirty percent below normal.

Although adequate rest restored the test subjects' scores to normal levels, the test suggests that impaired glucose tolerance as a result of sleep loss could eventually lead to diabetes, obesity and hypertension.

Research Ties Lack of Sleep To Risk for Hypertension

By NICHOLAS BAKALAR

Getting too little sleep may be a significant risk factor for high blood pressure.

In a study of more than 4,800 men and women, people ages 32 to 59 who got five hours of sleep a night or less were about 60 percent more likely to develop hypertension than those who slept six to eight hours.

The trend was the same even after controlling for depression, alcohol consumption, smoking, pulse rate, obesity, diabetes and other variables.

The study appeared this month in the Online-First issue of the journal *Hypertension*.

Researchers used data from a large epidemiological study, following subjects over a 10-year period. The participants had standardized medical examinations and answered questions about their health habits, including sleep patterns. The scientists excluded from the analysis anyone who already had hypertension, and over the next 8 to 10 years, they

Explaining how extra hours spent awake can change the body.

recorded the incidence of newly diagnosed cases of high blood pressure, or in a few cases, the cause of death.

"It's been known for a long time that sleep disorders are associated with hypertension," said James E. Gangwisch, the lead author of the study and a postdoctoral fellow at Columbia's Mailman School of Public Health, "but that could be for reasons besides not getting enough sleep. This is the first study that shows a relationship between short sleep duration itself and high blood pressure."

The researchers did not find the connection between sleep deprivation and hypertension in the older group of subjects, those 60 to 86. The authors suggest that this may be because people with hypertension, obesity and diabetes are less likely to survive into their later years, or because lack of sleep in younger people is more closely associated with obesity than it is in those over 60.

Dr. Meir Stampfer, chairman of the department of epidemiology at the Harvard School of Public Health, said that the findings were of moderate interest.

"This study suggests that sleep duration may contribute to hypertension," Dr. Stampfer said, "but the magnitude of the association is modest compared to dietary factors," especially being overweight, "the main driver for hypertension." He was not involved in the study.

Getting more than the average amount of sleep had no effect, either protective or helpful. People who got nine or more hours of sleep were no less likely to have high blood pressure than those who slept six to eight hours.

While many factors contribute to high blood pressure, lack of sleep appears to be an independent cause, according to Dr. Dolores Malaspina, a co-author of the paper.

"Normally during sleep our heart rate and blood pressure are lower," Dr. Malaspina explained. "In people deprived of sleep over a long period of time the average work done by the heart increases, and that can lead to irreversible changes in the heart and blood vessels." Dr. Malaspina is a professor of clinical psychiatry at Columbia.

Lack of sleep may also increase the effect of other hypertension risk factors, the authors suggest. It is probable, they write, that short sleep duration leads to obesity by influencing insulin sensitivity and the enzymes that control appetite.

Short sleep duration is associated with irritability, impatience, pessimism and stress — factors that may reduce the ability to follow healthy diet and exercise regimens.

The researchers concede that the study has certain weaknesses. The sleep duration figures depend on self-reports — not always reliable. And, the scientists were unable to rule out the possibility that lack of sleep was itself an early symptom of hypertension that was diagnosed later.

Because hypertension often goes undiagnosed, the scientists had no way of knowing whether sleep-deprived participants were more or less likely to seek treatment and get a diagnosis than those with normal sleep patterns.

Analysis of data from another large epidemiological study cited in the paper found that 30 percent of people with high blood pressure were unaware they had it.

LETTERS TO HOME&GARDEN

Noise can be hazard or just part of life

Editor — I am a retired physician with an interest in the health effects of noise pollution. The article by Arlene Silverman ("When noise annoys," June 3) was interesting, but I don't think it went far enough in describing the adverse health effects of noise. I believe Tom Rivard (a senior environmental health inspector for San Francisco) is incorrect in his assertion that noise does not always cause physical effects. Noise (defined as any unwanted sound), even if not loud, is perceived by the central nervous system as a "threat" with the resultant reflex cardiovascular and hormonal effects that are the hallmarks of stress. Unlike other senses, our hearing is always "on" even when we are asleep. He is absolutely correct in calling noise one of the great neglected environmental hazards.

In 1973, the federal Office of Noise Abatement and Control published extensive information about the many health hazards of noise pollution. Among its many significant adverse effects, noise impairs hearing, disturbs sleep, contributes to hypertension and heart disease, degrades performance at work and at school, reduces productivity, increases the rate of accidents, interferes with cognitive development in children, intensifies the development of latent mental disorders, and causes stress that influences mental health and social behaviors, according to the report.

When Congress withdrew funding from the noise abatement office in 1982, federal noise abatement efforts essentially ceased. Despite the evidence about the many medical, social and economic effects of noise, as a society, we continue to suffer from the same inertia, the same reluctance to change, the same denial of the obvious, that the anti-tobacco lobby faced a couple of decades ago. This inertia and denial are similar to those that delayed appropriate action on lead, mercury and asbestos. Now we seem unable to make

the connection between noise and disease, despite the evidence, and despite the fact that our cities are becoming increasingly noisier.

Legislators at all levels should protect us from noise pollution the same way they protected us from tobacco smoke. It is clear that laws can change behaviors in ways that can benefit society as a whole. Every person has the right to determine his or her soundscape; it should not be imposed by others. Ordinary citizens have a right to domestic tranquility. A quieter society will be a healthier, happier, safer and more peaceful one.

LOUIS HAGLER, MD
Richmond

REQUEST FOR DENIAL OF STREET SWEEPER VARIANCE

Traci Ann Svendsgaard
183 Vista Street
488-3142

Since last winter, the street sweeper has greatly diminished our quality of life. We all know what it is like to be awakened by a sudden, frightening loud noise in the middle of the night. Imagine **knowing** you'll be suddenly frightened awake and kept awake by a loud noise every Monday and Tuesday at 4:30 am for the rest of your life. That is equivalent to 104 mornings or nearly a third of each year sleep deprived.

The Noise Ordinance exists to protect citizens of Ashland from such disturbance:

"No person shall make, assist in making or cause to be made any loud disturbing or unnecessary noise with either annoys, disturbs, injures or endangers the comfort, repose, health, safety or peace of others"

I would like to make it known that the operation of the street sweeper in the early morning hours *annoys, disturbs, injures and endangers my comfort, repose, health, safety and peace* in the form of sleep deprivation at least two out of every seven nights. The consequences of sleep deprivation include physical effects, mental impairment and mental health complications, one's ability to think, to handle stress, to maintain a healthy immune system, irritability and depression. Lack of sleep can effect job performance, personal relationships and heightens the likelihood of accidents. I have been to my doctor for treatment of several of these symptoms. Dr. Beth Leone stated that she too was awakened and kept awake by the street sweeper.

While I agree that the citizens of Ashland have high expectations regarding the cleanliness of our streets, I am sure that the citizens of Ashland also have high and reasonable expectations about their ability to sleep. The town is changing and growing. New, expensive living spaces are being created smack dab in the middle of the "commercial" section of down town. Many existing homes lie in the area that abuts this commercial section; B Street, Pioneer, Oak, East Main, Granite, Hargadine, Fork, Vista, Gresham, Allison, 1st, 2nd and 3rd Streets, etc. All of the residents are made to hear the great howling machine at a time when most people count on getting the rest a human body requires. Apparently we are the only ones who have come forward, but after asking around, a great many are disturbed and unable to go back to sleep.

I realize that the sweeper has been in operation for years. It has always awakened me on Monday mornings in the summer and I have called the Street Dept. and the Police about it several times over the years. The Police dispatcher we spoke to admitted that she had been receiving calls in complaint for years. It is since this past winter when the new sweeper was employed that the true misery began. The howling, high frequency noise generated by the Street Sweeper, even at idle, exceeds the level of noise above which most people cannot sleep, 45 decibels.

While referred to as *transitory*, the sustained noise does violate the noise ordinance and does makes sleep impossible for us as we live only a few feet from the commercial section.

I ask the city council to deny the request for a variance on the grounds that the early morning noise causes an *unusual and unreasonable hardship* to many citizens of Ashland. I ask that a solution be found in the form of a 7am start time and/or parking restrictions in the down town on select days of the week. (It's pretty darn quiet downtown at 7am and the parking garage is empty) Or a solution involving the purchase of a quieter machine. Or both. I ask that you consider very carefully the quality of life and health and safety of the citizens of Ashland by ensuring that sleep not be shattered by a noise violation at an unreasonable early morning hour.

Thank you



RARE EARTH

33 N. Main Street Ashland, OR 97520
541-482-9501 Fax: 541-488-0715

RareEarthStore.com



June 20, 2006

TO: Mike Franell

FROM: Marcy Davy, Business Owner, Rare Earth

RE: City Street Cleaning Service

I appreciate the opportunity to share my concerns regarding the diminished street sweeping service.

It is my understanding that in previous years the downtown area benefited from a twice a week street sweep.

~~I've notice that this season the service has been reduced to one day a week and the results are visual. I must sweep 20-30 cigarette butts daily from my store front area, not to mention the garbage I quietly pick-up. The gutters are full!~~

As any business owner, I pay to our utility department a fee for this service. (\$29.16mo) I am grateful for what John and the guys provide at the Street Dept. I would hope the direction is to reinstate the twice week service and not question a time convenience. Man, it's a pride issue!

Thanks for your consideration,

Marcy

Marcy Davy

* BEFORE TOMIGHTS MEETING, JUST
GO SEE WHAT I'VE DESCRIBED

Thanks!

From: Colin Swales <what_vf4u@yahoo.com>
To: Barbara Christensen <barbarac@ashland.or.us>
Date: 8/17/2006 10:15:10 PM
Subject: Sleepless in Ashland...

Barbara,

Could you please make copies for council and ask a member to please read this into the record, as I won't be able to make the lunchtime meeting tomorrow.

Mayor and Council,

RE: Transitory Sweeper Noise

Unlike the Svendsgaards who must suffer the road sweeper circulating round and around OSF's Hargadine parking deck at 4:00 a.m., I have my own version of this cruel and unusual punishment...

(In the summertime I try to sleep with my windows open rather than annoy my neighbors with A/C running all night long). When the sweeper first wakes me in the wee hours it is bad enough. But the real torture is that just as one is finally descending back into sleep the behemoth returns an hour after its original sweep on its return trip back up East Main - only to wake me once again !

The historic residential neighborhoods above the downtown act like a natural amphitheater and noise ricochets off the "streetwall" buldings on main street. Frequent emergency fire and ambulance sirens from Station #1 and police whoop-whoops are par for the course. But the timing of the use of this sweeper/sucker is entirely discretionary and would be best left until folks are awake. (per the current ordinance)

Colin Swales
461 Allison Street.

P.S. Can we also ban the whining, smelly back-pack blowers that also kick up the early morning downtown dust. What happened to the use of the common broom, which was once considered Very Valdez !

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