BUILDING DESIGN INNOVATION BASED ON SUNLIGHT AND HEALTH CONSIDERATIONS

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ABSTRACT

Despite the fact there a large body of evidence that links light to range of illnesses including cancer, building industry and its regulatory bodies are yet to address this issue in a manner that reflects its importance. It is proposed that in order to gather support for daylighting legislation is to underscore its health effects. Many cities around the world have now zoning ordinances that legislate public access to sunlight in streets and public places, but not inside buildings. Daylight is still considered a luxury or an amenity but not a requirement. This paper outlines these regulatory issues and outlines design issues relevant to daylighting and health.

Keywords: Architecture, design health, light,

I. INTRODUCTION

Over the last three or four decades, discussion about daylighting as a viable design option has been intimately linked to the debate about energy conservation in building design. Growing concerns about global warming, depletion of fossil energy sources, and soaring oil prices have put energy efficiency at the forefront of architectural research. Statistics support the energy argument. According to the 1998 Energy Information Agency of the U.S. Department of Energy, the building sector consumes about 36% of all the energy consumed in the United States, more energy than the transportation sector (27%) and an amount almost equal to that used by the industrial sector (38%). Lighting is responsible for 30% to 50% of all the energy utilized in commercial and office buildings. Studies have shown that for commercial and office buildings occupied during the day total electricity and peak demand savings of 20 to 40% in lighting and cooling can be achieved. Despite the potential for the enormous energy savings of daylighting, efforts to curtail energy consumption have been primarily technologically driven, relying on improving the energy efficiency of electric lighting rather than using renewable sources of energy such as daylight. The use of renewable or low-energy sources is not yet a conventional part of architectural practice. Regulatory bodies have not been successful at establishing compulsory daylighting standards (Boubekri, 2004 a & b). Lighting standards tend to be formulated either as energy consumption standards or in terms of visual performance. There is an implicit understanding that the recommended levels for visual performance are intended to be average minimum levels. These Illuminance requirements stipulated by