

## Executive Summary

### A Study Into the effects of Light on Children of Elementary School Age

#### “A Case of Daylight Robbery”

This study was written by: Warren E. Hathaway, John A. Hargreaves, Gordon W. Thompson, and Dennis Novitsky initiated, funded and distributed by:

Policy and Planning Branch  
Planning and Information Services Division  
Alberta Education  
11160 – Jasper Avenue  
Edmonton, Alberta T5K 0L2  
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Yes! Light affects people in some surprising ways. Some would even go so far as to say that light is nutritious. In order to get a firmer grasp on some of these effects of light on people a study of the effects of light on children of elementary school age was undertaken by Alberta Education between 1987 and June 1989.

#### Excerpts of Study:

- To reproduce a 1981-1985 study that found that trace amount of ultraviolet light served to reduce dental cavities. (Specific schools not named to protect student's identity)
- Steering committee managed test:
  - Members of committee included: Alberta Occupational Health and Safety, Faculty of Dentistry, University of Alberta; Duro-Test of Canada; Alberta Education (School Buildings Services and Policy and Planning).
- Testing:
  - 1. Full spectrum fluorescent 2. Full spectrum fluorescent with ultraviolet supplements 3. Cool-white fluorescent 4. High-pressure sodium vapor.
  - Data reviewed: dental histories, growth and development histories, vision histories, scholastic achievement histories and/or attendance histories when compared over a two-year period.
- Age criteria:
  - Upper elementary age were selected for the following reasons:
    1. Upper elementary students were used in first study
    2. Elementary students tend to remain in home rooms most of the time making it easier to ensure that they remain under selected lighting types
    3. Elementary students are going through significant body changes (including eruption of permanent teeth)

- School selection
  - Schools were willing to participate because they had high-pressure sodium vapor lighting and were willing to have their lighting modified through the Alberta Education's Building Quality Restoration Program.
- Data Collection conducted by:
  - Faculty of Dentistry, Registered Nurse contracted to Alberta Education, Policy and Planning Branch of Alberta Education and test for spectral quality of lights were completed by Radiation Health Services of Alberta Community and Occupational Health.
- Major Findings of the study:
  - Over a two year period students receiving ultraviolet light supplements developed 0.17 decayed surfaces while the non-UV group developed 1.53 decayed surfaces.
  - Those students receiving ultraviolet light supplements also demonstrated the best attendance, the greatest gains in height and weight, and the best academic achievement.
  - Over a two year period students under high pressure sodium vapor lighting had the slowest rates of growth in height (2.1 cm less than students receiving a ultraviolet light supplement), and achievement (a gain of 1.6 years in comparison to the 2.0 years which was the average of all other sites). They also had the lowest percentage of attendance (94.3 percent) while other sites had attendance patterns of 95.9 percent, 95.9 percent and 96.2 percent. The difference of 1.6 percent between the poorest and next best site translates into 3.2 days per year (about the time needed to recover from a major cold).

The findings support the conclusion that lighting systems are not neutral – they have non-visual effects on people who are exposed to them over long periods of time.