Bill as Introduced

SB 167 – AS INTRODUCED

2003 SESSION

03-1135
04/10

SENATE BILL ***167***

AN ACT relative to indoor air quality assessment in public school buildings.

SPONSORS: Sen. Estabrook, Dist 21; Sen. Below, Dist 5; Sen. Larsen, Dist 15

COMMITTEE: Environment

ANALYSIS

This bill requires the departments of health and human services, labor, and education to monitor the indoor air quality and other environmental health conditions in public school buildings.

This bill is a request of the study committee established in 2002, 173 (HB 329).

Explanation: Matter added to current law appears in ***bold italics.***
Matter removed from current law appears [~~in brackets and struckthrough.~~]
Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

03-1135
04/10

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Three

AN ACT relative to indoor air quality assessment in public school buildings.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 Purpose and Findings.

I. The general court finds that poor air quality in schools has been linked by medical and scientific authorities to the exacerbation of respiratory diseases such as asthma and other allergic disorders, and that such diseases place unnecessary and preventable burdens on school children and staff while depriving the affected person of well-being, academic achievement, and quality of life.

II. Further, the general court finds that:

(a) Indoor air quality complaints and requests for assistance from school administrators, staff, and parents have increased dramatically over the past decade.

(b) A primary cause of poor indoor air quality is a lack of investment in maintenance in school buildings leading to a build-up of pollutants, dust, mold, and other sources of biological growth.

(c) A secondary cause of poor indoor air quality is a lack of adequate ventilation systems which supply fresh air and exhaust stale air from all parts of the building.

(d) The prevalence of allergies, asthma, and sinusitis especially among children have doubled during the past 2 decades creating a larger number of individuals who can be affected by poor building conditions.

(e) Children are required to attend public schools and have the right to study in a healthy environment.

(f) Prevention of indoor air quality problems is simple and affordable when addressed in a proactive manner with adequate resources and trained personnel, while delays in maintenance often lead to expensive repairs passed on to future generations.

2 Health and Sanitation; Investigation of Sanitary Conditions. Amend RSA 200:11-12 to read as follows:

200:11 Investigation of Sanitary Conditions. The department of health and human services shall, upon complaint of any responsible person, investigate the sanitary ***and environmental*** conditions of any schoolhouse or building used for school purposes.

200:12 Requiring Changes; Condemnation. If the department of health and human services shall find that such schoolhouse or building is in any respect a menace, or likely to become a menace, to the health or bodily welfare of the pupils or teachers, the department shall call the attention of the local board of health ***and the local school board*** to the facts; and, if after a reasonable length of time, ***not to exceed 6 months,*** the complaint has not been attended to in a satisfactory way, the

department shall either order such changes as will in their judgment make the building safe [~~and~~], sanitary, ***and healthy*** for school purposes or condemn the [~~same~~] ***building or individual areas within the building*** and forbid its further use.

3 New Section; Health and Sanitation; Public School Building Indoor Air Status. Amend RSA 200 by inserting after section 12 the following new section:

200:12-a Public School Building Indoor Air Status.

I. The commissioner of the department of health and human services shall monitor and report on the health status of public school buildings giving priority to monitoring the indoor air quality of public school buildings based on a school's need for improvements to sanitation, environmental conditions, and safety.

II. The commissioner of the department of labor shall annually submit a report to the commissioner of the department of health and human services detailing all school-based workers' compensation claims in a manner that identifies building-related health concerns such as asthma and other environmentally-related health conditions.

III. The superintendent of each school district shall annually submit a report to the commissioner of the department of education detailing each school district's efforts to improve indoor air quality and ensure a healthy learning environment.

4 Effective Date. This act shall take effect 60 days after its passage.

Committee Minutes

SB3

Date: March 12, 2003
Time: 10:15 a.m.
Room: 104 LOB

The Senate Committee on Environment held a hearing on the following:

SB167 relative to indoor air quality assessment in public school buildings.

Members of Committee present: Senator Johnson
Senator Cohen
Senator Barnes
Senator Below
Senator Prescott

The Chair, Senator Carl R. Johnson, opened the hearing.

Senator Carl R. Johnson, D. 3: I am going to open the hearing on SB167 and call on the prime sponsor, Senator Estabrook. Good morning.

Senator Iris Estabrook, D. 21: Good morning. Thank you very much Mr. Chairman. As indicated on the cover of the Bill, the Bill is a result of 2002 study committee created under House Bill 329. House Bill 329 originally called for all public school buildings to have annual fire inspections and meet State air quality standards. The House was concerned with the broad consequences of these requirements and chose to study the issue. The issue was initially raised in response to an August 2000 Turner Group report to the State Board of Education on the condition of our public school facilities. The report notes serious safety concerns. Thirty nine percent of schools reported fresh indoor air as a facility weakness. In studying this issue we discovered some interesting facts. Schools have unique qualities which make air quality a problem. The age of the buildings, increased risk from those outdated systems. A lack of dollars to renovate and maintain those systems and over crowding. Schools have 4 times the number of occupants per square foot as office buildings. These factors are compounded by the fact that children breath in more air per minute than adults. There are currently no requirements to report school health status information but there have been multiple school closings for air quality related problems.

This Bill, Senate Bill 167, takes modest first steps at addressing this problem. First, it includes environmental conditions along with sanitary conditions in what the Department can investigate. It further directs the Department of Health and Human Services to monitor and report on the health status of public school buildings. SB167 calls for an assessment of the status of air quality in our schools and for public reporting. This Bill will strengthen Health and Human Services ability to deal with environmental problems and put some limits around the time frame for doing so.

Ultimately, improvements in data collection will prevent illness and lower costs. As you can see from the EPA article (**Attached hereto and referenced as Attachment #1**) I provided you, improvements in air quality will also improve student achievement. This Bill will start us down that road and I hope you will take it. I have a few other pieces of data to share with you. As I mentioned in my testimony, we are hearing increasingly from schools with poor air quality problems and the first thing I am going to pass around is just a priority list of air complaints as of January 2002. (Attached hereto and referenced as **Attachment #2**). The other set of data are graphs that show the types of air quality complaints that are arriving in the Department in terms of homes, schools, public buildings and you can see from this graph that the problems in schools have multiplied over the last couple of years. (Attached hereto and referenced as **Attachment #3**).

So, although I would like to see the committee take stronger action frankly. I think this is at least a first step in addressing the issue. I became interested in it because some of our local media were covering air quality problems in the Farmington Schools which is not in my District but in my County. There were parents in Farmington who were pulling their children from school and home schooling them because they didn't want them sitting in a sick air environment of the public schools. It seems to me when public education is not available because of health concerns in the environment, we should begin to do something about it.

As I said, I view this as a very modest first step. I would have liked to see us jump right ahead and make them meet State air quality standards which is what we do for buildings that the State owns or rents, but there are a lot of ramifications to that. So, I think the least we can do is begin to get a handle on the data and how big a problem it is.

Senator Carl R. Johnson, D. 3: Senator, it seems to me that this would give Health and Human Services more work and authority and I don't see a fiscal note on here. I just wondered how we could address that.

Senator Iris Estabrook, D. 21: Thank you for asking. During the work of the study committee, the Department indicated to the committee that it felt it could reprioritize it's current resources to deal with this and that was their intent and it was on that basis that we moved forward with that in appropriation.

Senator Carl R. Johnson, D. 3: On the first page, starting with Line 24, what constitutes a responsible person? Complaint of any responsible person?

Senator Iris Estabrook, D. 21: I don't know why it says "responsible person". That is current language. The only change is the words, "and environmental" are added. But why the original statute said the person had to be responsible to make the complaint, I am not sure.

Senator Carl R. Johnson, D. 3: Perhaps the person from Health and Human Services, I believe that is here today can address that. So all of the, if they find that this building is not suitable for work, I assume the cost is born by the local school district?

Senator Iris Estabrook, D. 21: Yes. As it is under current law. That is nothing new.

Senator Carl R. Johnson, D. 3: Any further questions? Senator Barnes.

Senator John S. Barnes, Jr., D. 17: Yes. Thank you Mr. Chairman. Two of the schools in Raymond are on that list. We took care of one of them yesterday at the town meeting and the other one hasn't been taken care of. I am just concerned. Obviously, I am concerned about the health, and who says the health, the people that wanted the 17 million dollar new school said the health was horrible and all the kids have been sick for ever and ever. But obviously, that is not true cause we haven't lost anyone and the kids all seem healthy. What, I heard you, I guess my question is, Senator Johnson asked you a question, do these people have enough personnel and money to do this without a fiscal note?

Senator Iris Estabrook, D. 21: That is what was presented to us as their intent.

Senator John S. Barnes, Jr., D. 17: Your answer was yes and I believe your answer but I think once they get going, they are going to find out they don't have enough money and enough people because that is quite a task. I am just wondering how far the State is going to put their nose into the local schools. I have a real problem with, I like home row, but what we did

yesterday I liked very much and I don't like big brother necessarily coming down and putting his nose under my tent. Would you believe?

Senator Iris Estabrook, D. 21: I believe Senator but I also believe the State has some obligation to have a healthy learning environment.

Senator Carl R. Johnson, D. 3: Further questions. Thank you Senator.

Senator Iris Estabrook, D. 21: Thank you.

Senator Carl R. Johnson, D. 3: Senator Larsen is in favor of the Bill and not able to speak today. We do have a gentlemen here, I believe, from the Department of Health and Human Services and also COE. Could you come up and answer some questions perhaps. Give your name.

Matthew Cahillane, DHHS: My name is Matthew Cahillane and I am an Environmental Scientist with the Department of Health and Human Services.

Senator Carl R. Johnson, D. 3: Matthew, would you be kind enough to kind of build on Senator Estabrook's testimony relative to you being able to handle these complaints as they come in and also address Senator Barne's concern.

Matthew Cahillane, DHHS: Yes. Over, well, pretty much for most of the 90's. The early 90's there wasn't much response the Department of Health could muster for responding to schools. Sick schools. Generally lack of ventilation and build up of pollutants indoors. We obviously go in and inspect kitchens in schools and everybody is in support of that because it can lead to illness but we haven't been able to have support to look at environmental conditions because most of our power is based on this older law that was passed before.

In regards to kind of a responsible person and who calls in. The only reason that came up really is because if someone is known to be mentally ill or involved in a legal suit, that would not necessarily constitute a responsible person. That would be a biased person at that point. In terms of responding to this with enough resources, we have one funded position now that we have some Center for Disease Control money and some State funds that support that and what we are hoping to do, I had written a grant for almost a half a million dollars over the summer time for a year to look at environmental illnesses in New Hampshire. I think that has been caught up right now in the budget process because it may create new state positions or are all federally funded. I feel like if we can achieve that, to pass that, that would

provide more than enough resources to look at some of these issues, such as schools.

Senator Carl R. Johnson, D. 3: Where did Senator Barnes go? One of the concerns that I have is that if you look at the number of schools in the State of New Hampshire and the age of some of those schools that this could snowball into a dramatic shift in what we are trying to do and the cost. I just have a concern about that. Senator Barnes did you?

Senator John S. Barnes, Jr., D. 17: I have a big concern about what we are discussing. We have one of the schools in Raymond that is on that list that was built in 1912. Yesterday the voters, we only had 57% of the people to say we are going to build a new one but it is still sitting there. We have taken steps. I was on the School Board, I guess I still am until Saturday, and we closed the oldest part of the wing down. We took the kids out of there but there is mold, supposedly there is mold, and you hear all sorts of horror stories. We had some of those people up here to testify last year as a matter of fact that came up here and they wanted to stay here. They said it publicly they want the State to close down those two schools in Raymond. I got up and had some choice words for it, but that is beside the point. They really want the State to come in and close those schools down and red tag them and say your kids can't go to school there anymore. I don't know what they are going to do with the kids but, they didn't think about that I guess. They want to spend 70 million dollars instead.

Matthew Cahillane, DHHS: I don't know that the Department of Health ever closed down any building against the will of the school administrators. We always try to work with them. There was one building in Plaistow which I think was so dusty and dirty inside due to construction and some other issues that it actually got into the kitchen and that was our only ability to go in and say, this building is too unhealthful, once it reached the food the people were eating. Other than that, we didn't have any power.

Senator John S. Barnes, Jr., D. 17: This concerns me if the State is going to take the power to close schools down then we have a problem. I have a huge problem.

Matthew Cahillane, DHHS: I think that, this appears to be a Bill that is really going to study what is happening as a way of supporting that. Because there hasn't been an antagonistical relation between the Department of Health and schools up to this point. Very cooperative. Because I know that I can't get the job done unless I work for the schools.

Senator Carl R. Johnson, D. 3: Senator Prescott.

Senator Russell E. Prescott, D. 23: Thank you Mr. Chairman. The Town of Atkinson, have they had problems with the air quality in one of their schools, their middle schools? Did they work with Health and Human Services? Are you familiar with that?

Matthew Cahillane, DHHS: They did. As I recall, I didn't work on it, so I believe it was due to Radon in the water. Is that correct?

Senator Russell E. Prescott, D. 23: Yes.

Matthew Cahillane, DHHS: And what they found was, there is no requirement to test for Radon in water in schools. I am not even sure if there is a requirement for Radon in air, but they found the levels to be very high. Two hundred times above the standard and the people in the community were very concerned that nobody was looking at the environmental quality of the school. There is no requirement to necessarily due that and that came up in that piece. In the end, I think it was shown that the risk wasn't necessarily high but they felt that like they were acting with enough information. The parents did and school administrators to make a decision.

Senator Russell E. Prescott, D. 23: May I follow up.

Senator Carl R. Johnson, D. 3: Yes, please.

Senator Russell E. Prescott, D. 23: Thank you Mr. Chairman. The local community really drove that issue and they were pretty much in control of the situation and they just went to the State Department of Health and Human Services and asked for some assistance.

Matthew Cahillane, DHHS: Yes, that was my understanding.

Senator Russell E. Prescott, D. 23: Now how, in comparison to that situation, how would that change if this Bill were passed?

Matthew Cahillane, DHHS: I think in that situation it wouldn't change because we weren't able to prove a risk to the children in the building. We were able to show a high contaminant level and if you think of that as a preventative action, they were able to monitor it and make sure the exposure over time, that they shorten the exposure by trying to affect the system. So, the gluten didn't build up in the schools. In that sense I thought it worked fairly well.

Senator Russell E. Prescott, D. 23: And if this Bill were not passed, how would it effect that kind of situation?

Matthew Cahillane, DHHS: I think it would have worked about the same. Radon in schools is different then a school who may choose not to clean and have dust build up and allergens which effect the rising number of asthmatics in our communities. Schools who choose or cannot afford, at that time, a new ventilation system and the amount of fresh air goes down over time. In general, creeping symptoms such as sinusitis, allergies, headaches, skin rashes, things like that creep up. You don't walk into a school and start to see sick people dropping. But maybe you see more people who can't participate on sports teams. You see people who are, children, who aren't able to perform as well and you may see some of the staff in the school who aren't performing well also. My hope is that with this Bill by gathering more information, that we will be able to work with the schools to say that this would be an appropriate investment at this time. Schools are always investing in changes in the school to make the people most healthy.

I do want to clarify again that the Department of Health is not in support of the Bill, they are monitoring it at this time, like they were before. The testimony I am giving now, is just really to provide more information and data.

Senator Carl R. Johnson, D. 3: Any further questions? Thank you Matthew.

Senator Russell E. Prescott, D. 23: May I ask one more question.

Senator Carl R. Johnson, D. 3: Yes, Senator Prescott.

Senator Russell E. Prescott, D. 23: My question is that if this Bill were passed, are we taking more responsibility aware from housing and local control or are we just helping the towns to know of an indoor air quality problems? Or are we just taking responsibility away from somebody else outside.

Matthew Cahillane, DHHS: If you look at that list of twenty or so schools that are on our radar screen. We are trying to watch them and prioritize them, get to them, talk with them in a voluntary manner. At this point, I don't know of one that we would close, or close part of it. Of course, we would want to be able to go in and say this area isn't necessarily fit, could you move them to a small area. I think it would be, very unlikely that the school would be closed but certain area would be identified as being not as healthful. It is my understanding that there are two parts of the Bill.

Studying, which I think is very important because that is the only way you make decisions and then more authority to close or act upon it or force schools to spend money to make them more healthful. One of those, both of those could be useful and certainly the studying is an essential part to reach the other.

Senator Russell E. Prescott, D. 23: Thank you.

Senator John S. Barnes, Jr., D. 17: Thank you Mr. Chairman.

Senator Carl R. Johnson, D. 3: Senator Barnes.

Senator John S. Barnes, Jr., D. 17: If the State were to come in, let's say, Raymond, we are red tagging your school and closing it down, would that be an unfunded mandate. Wouldn't the State have to build us a new school?

Matthew Cahillane, DHHS: It might be similar to an infectious disease in the school where certain schools are closed because they are harboring pathogens or other things that are dangerous to the people in them.

Senator John S. Barnes, Jr., D. 17: The State wouldn't be liable or they would be liable to build us a new school?

Matthew Cahillane, DHHS: For this law? I believe that they would not be liable, the State would not be.

Senator John S. Barnes, Jr., D. 17: Okay, thank you.

Senator Carl R. Johnson, D. 3: Any further questions? Thank you Matthew.

Matthew Cahillane, DHHS: You are welcome.

Senator Carl R. Johnson, D. 3: The gentlemen for DOE. Can you sign in and perhaps answer a few questions.

Edward Murdough, Dept. of Education (DOE): Mr. Chairman, members of the committee, my name is Ed Murdough. I am the Administrator of the Office of School Building Aid at the Department of Education.

Senator Carl R. Johnson, D. 3: Having said that. Could you give us a kind of overview of how this has been developing over the years, this problem and how you see it at the moment.

Edward Murdough: I think that has been previously stated. It is something that has developed over time. We have, there is 445 school buildings within the State which are different. Excuse me, public school buildings which are different than a number of public schools because there are a few cases where we have two schools in one building. Some of those are more than a hundred years old. I believe about 40% of them pre-date WWII and decades in between. Some of the larger problems in this area actually occur in schools that were built in the 1970's. There are two reasons for that. One was, that was the era of open education. Open classrooms. We built schools without partitions in them in some cases and since then, education has changed and partitions have been installed in some of these buildings and the ventilation systems were not designed to have the building divided up and it causes problems. Another thing that happened in the 70's was the original energy crisis and building codes generally around the country and including in New Hampshire, then lowered the requirement for ventilation, for air exchange in the buildings which, in order to save energy, which by today's standards is insufficient and also results in some of these problems. I would say that many of these kinds of issues would be eligible for school building aid under RSA 198:15. In order to correct them, that would be between thirty and fifty five percent of the cost of doing it. Assuming again, that the work qualified under the statute.

Senator Carl R. Johnson, D. 3: I guess my first question, what kind of a reaction do you think DOE would take if Health and Human Services shut down a building in order to stop the education of those kids?

Edward Murdough: Well, obviously, shutting down a building without an alternative place for the children to go would be a problem for the Department of Education. It would be unacceptable. The Commissioner does have some discretion in waiving the 180 day requirement but I don't believe that is particularly defined but the school could be closed for perhaps four or five days and we could waive that requirement but something that was going to be longer than that would be a serious problem. The Department would want to work with the local district and with the Department of Health & Human Services to find a resolution to the problem as quickly as possible.

Senator Carl R. Johnson, D. 3: Thank you. Any further questions?

Senator John S. Barnes, Jr., D. 17: I have one Senator Johnson.

Senator Carl R. Johnson, D. 3: Senator Barnes.

Senator John S. Barnes, Jr., D. 17: Do you have the check in the pocket for Raymond? We passed kindergarten yesterday and I was coming up here to get the money. Do you have the check with you?

Edward Murdough: I am afraid I left my checkbook Senator but I believe it is at the Department.

Senator John S. Barnes, Jr., D. 17: It's in the mail.

Edward Murdough: And I was glad to see that.

Senator Carl R. Johnson, D. 3: Thank you.

Senator John S. Barnes, Jr., D. 17: Now that is only 18 towns in the country that don't have it.

Senator Clifton Below, D. 5: Mr. Chairman, may I?

Senator Carl R. Johnson, D. 3: Yes.

Senator Clifton Below, D. 5: Thank you. RSA 198:15 that you reference is that the general building aid or is that something special for circumstances like this?

Edward Murdough: No, Senator, that is the general school building aid. One of the topics intelligible for school building aid is a substantial operation and overhaul or installation of a ventilation system where there is not one, would qualify.

Senator Clifton Below, D. 5: Do you think we should, at all, consider in that statute perhaps making it a little broader so that other ventures that are implemented to address environmental health or sanitary conditions of buildings, even if they are not major renovation they qualify? Or are they generally..?

Edward Murdough: Generally, that has been interpreted in the Department, anything that is a safety health issue, as long as it is not maintenance or repair. The law does not allow maintenance or repair type work. There is kind of a gray area on what is substantial renovation. I have been in the construction business for 25 years and I have yet to find a definition of that. If you wanted to clarify it to make sure that these issues were covered, it certainly would not hurt anything but right now, and historically, the Department would have considered any of these things to be eligible.

Senator Carl R. Johnson, D. 3: Further questions? Thank you.

Edward Murdough: Thank you sir.

Senator Carl R. Johnson, D. 3: Senator Estabrook may I ask you a question please.

Senator Iris Estabrook, D. 21: Yes you may.

Senator Carl R. Johnson, D. 3: Two members of this committee either are school board members or have been school board members.

Senator Iris Estabrook, D. 21: Me too.

Senator Carl R. Johnson, D. 3: That I know of. That is three of us as far as I know. I would like to think that my experience on issues like this, with our District is that we have always managed to work things out with HHS and with DOE to everyone's satisfaction and I would like to think that we could continue along that line without having the threat in there of shutting the building down. That is my concern. I would like to think that this is a partnership between educators and health providers and they could work together and have everybody in the community feel good about it without the threat of closing the building down.

Senator Iris Estabrook, D. 21: Well, I appreciate that and I don't want to reach that point either and I think that part of the Bill is designed to make Health and Human Services work better with school districts so that we don't get to that point. I would point out that it is current law that the Department may close school buildings if they are determined not to be safe or sanitary. All we are doing here is adding healthy. It certainly seems to me that we want buildings to be safe, sanitary and healthy. I think that we understand that we are operating in a small State here and we are all going to be working with each other and that is certainly the Bill's intent.

Senator Carl R. Johnson, D. 3: Thank you. Senator Barnes.

Senator John S. Barnes, Jr., D. 17: No. I was waiving at Senator Flanders. I think he was looking for me.

Senator Robert B. Flanders, D. 7: I left something on your chair.

Senator Carl R. Johnson, D. 3: Thank you.

Senator Iris Estabrook, D. 21: Thank you Mr. Chairman.

Senator Carl R. Johnson, D. 3: No further testimony we will close the hearing on SB167.

Hearing closed at 10:45 a.m.

Respectfully submitted,

Susan A. Bridge
March 17, 2003

3 Attachments

ATTACHMENT 4
1

EPA

United States
Envrionmental Protection
Agency

Indoor Environments Division
Office of Radiation and
Indoor Air

EPA 402-F-00-009
August 2000



Indoor Air Quality and Student Performance

The Problem

How Does Indoor Air Quality Affect A Child's Ability To Learn?

Poor indoor air quality (IAQ) can cause illness requiring absence from school, and can cause acute health symptoms that decrease performance while at school. In addition, recent data suggest that poor IAQ can reduce a person's ability to perform specific mental tasks requiring concentration, calculation, or memory.

The Cause

Air in most indoor environments contains a variety of particles and gaseous contaminants. These contaminants are commonly referred to as *indoor pollutants* when they affect human health and performance. Indoor temperature and relative humidity can also affect health and performance directly, and can affect human performance indirectly by influencing the airborne level of molds and bacteria.

Most often, poor indoor air quality results from the failure to follow practices that help create and maintain a healthy indoor environment. Common examples include failure to:

- Control pollution sources such as art supplies and laboratory activities
- Control temperature and humidity
- Control moisture and clean up spills
- Ventilate each classroom adequately
- Adequately perform housekeeping and maintenance operations
- Use integrated pest management to minimize the use of pesticides

Failure to deal adequately with any of these issues may go unnoticed, but can and often does take its toll on health, comfort, and performance.

The Consequences

Recent data suggest that poor IAQ can reduce a person's ability to perform specific mental tasks requiring concentration, calculation or memory.

Specific Studies

Schools should be designed, built, and maintained in ways to minimize and control sources of pollution, provide adequate exhaust and outdoor air ventilation by natural and mechanical means, maintain proper temperature and humidity conditions, and be responsive to students and staff with particular sensitivities, such as persons with allergies or asthma. Adverse consequences can easily result when IAQ problems are not addressed properly.

Effects from Building-Related Illnesses

Children do not perform as well when they are sick or absent from school. Indoor air quality problems can result in absences because of respiratory infections, allergic diseases from biological contaminants, or irritant reactions to chemicals used in virtually every part of the school. Some conditions in the school environment are closely associated with the incidence of sick building syndrome and asthma symptoms[1,2], and asthma-related illness is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year.[3] In addition, persons with asthma or other sensitivities may

Asthma-related illness is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year.

have reduced performance in the presence of environmental factors that trigger their asthma. All of these "building-related illnesses" result from the lack of effective indoor environmental quality management. In extreme cases, schools sometimes have to be closed until problems are investigated and solved.

Effects from Mild Symptoms of Distress

What about people who do not have a diagnosable illness, but simply don't feel well? People may report feeling lethargic, having headaches, having a mild sore throat or itchy eyes; or they may have a sense that the air is "stale," "stuffy," or "too dry." When these types of symptoms are made worse by being in a building, they are referred to as "sick building syndrome."

Estimated Loss in Performance

Motivation can often overcome small burdens of environmental stress so that children's performance may not decline. However, continued environmental stress can drain children's physical and mental resources and ultimately affect their performance. Evidence from office workers suggests that when individuals experience just two symptoms of discomfort, they begin to perceive a reduction in their own performance. That perception increases as the number of symptoms increases, averaging a 3% loss with 3 symptoms, and an 8% loss with 5 symptoms.[4] It follows that when large numbers of students and staff experience signs of discomfort related to the air inside their school, teaching and learning performance will likely degrade over time.



Measured Loss in Performance

Studies relating direct performance measurements to changes in indoor air quality are just now emerging. For example, a recent European study of 800 students from eight different schools provides data on IAQ, health symptoms, and students' ability to concentrate.[5] In the study, carbon dioxide measurements were taken in the classrooms, and students were given a health symptom questionnaire. A computer-based program scored their ability to concentrate. Carbon dioxide itself is not a health threat at levels found indoors, but since the main source of carbon dioxide in buildings is exhaled breath, and the main mechanism for removal is ventilation, high carbon dioxide levels in classrooms are an indication of low ventilation rates and, therefore, high levels of pollution. In classrooms where carbon dioxide levels were high (low ventilation rates), student scores on the concentration tests were low; and their health symptom responses were high. The results were statistically significant and tend to confirm that with IAQ management, including source control and adequate ventilation, student performance can improve.



Another controlled study of adults shows a similar relationship between the presence or absence of an indoor pollution source, health symptoms, and mental function.[6] In this study, a health symptom questionnaire was completed by 30 female subjects who performed various kinds of mental tasks typical of office work in groups of six at a time. They worked in a realistic office environment specifically designed to have good IAQ, with low pollution levels. Because carpeting that is not adequately maintained can sometimes act as a source of pollution, a 20-year-old used carpet from another building was used to represent a potential pollution source. The carpet was periodically introduced on racks behind a screen so that subjects had no way of knowing when the carpet was present. The women were tested in typing, arithmetic, logical reasoning, memory, and creative thinking during several trials with and without the carpet present. During the trials without the pollution source, the subjects' performance was improved. The number of words typed increased 6.5%*, typing errors were reduced by 5%***, the addition test scores increased 3.8%**, and logical reasoning test scores improved by 3-4%***. When the pollution source was present, there

Continued environmental stress can drain children's physical and mental resources and ultimately affect their performance.

was an increased prevalence of headaches during tasks requiring concentration, suggesting that at least part of the affect on performance was from pollution-related adverse health effects. In a later study using the same procedure, increasing ventilation rates also provided a statistically significant improvement in human performance.[7]

* Statistically significant at 99%; ** at 95%; and *** at 90%

Measured Effects of Temperature and Humidity

In addition to indoor pollution and ventilation, studies confirm that various human activities such as typing or driving a vehicle are diminished when people are demonstrably too cold or too hot. Temperature is also implicated in studies of sick building syndrome. Maintaining temperature at the high end of the comfort zone tends to increase symptoms, while temperatures at the low end of the comfort zone tend to reduce symptoms. Similarly, individuals perceive the quality of the indoor air to be better when temperature and/or humidity are toward the low end rather than the high end of the comfort zone.[8, 9, 10]

There is also good evidence that moderate changes in room temperature, even within the comfort zone, affect children's abilities to perform mental tasks requiring concentration, such as addition, multiplication, and sentence comprehension. Study results were different for boys and girls, and the effects varied for different types of tasks. But, in general, the evidence strongly supports the need to avoid extreme conditions and to provide for as much individual temperature control as possible.[11, 12]

Will Performance Be Affected Even If No One Is Complaining?

Performance can certainly be expected to suffer if conditions are serious enough for people to complain. However, the lack of complaints is NOT an indication that performance cannot be improved. For example, in the above studies, symptoms were solicited through questionnaires (as opposed to complaints), and tests were performed on individuals in typical kinds of school and office environments. That is, the reductions in performance were recorded in circumstances that could easily have gone unnoticed because of the absence of complaints.

The Solution

What You Can Do

School systems should take advantage of available programs such as the ***IAQ Tools for Schools*** **Kit** to improve and maintain good indoor air quality in their schools. Programs can be targeted to the maintenance of existing school facilities and to new school construction.

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1. Smedje, G., and D. Norback. 1999. The School Environment – Is It Related to the Incidence of Asthma in the Pupils? In *Indoor Air '99. The Eighth International Conference on Indoor Air Quality and Climate. Vol 5*, pp. 445-450.

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7. Personal communication. 1999. Personal email communication from P. O. Fanger to David H. Mudarri. 12/23/99.

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MAR-18-2003 15:12

Priority Level	Date Reported	Town	Address	Health Concern		Asthma	Students	At Risk
1High	3/6/02	Strafford	Strafford School	flooding in walls			532	muliple
1High	3/6/02	Milton	Milton Elementary School	poor ventilation			414	muliple
1High	3/5/02	Rochester	Spaulding High School	mold and odors			350	20
1High	1/7/02	Lyndeborough	Lyndboro Central School	poor ventilation			133	20
2medium	6/7/02	Pembroke	Pembroke	poor ventilation			1,013	
2medium	4/30/02	Londonderry	South L'derry Elem School	unknown			712	n/a
2medium	4/1/02	Raymond	Lamprey River Elem School	poor ventilation			410	
2medium	11/7/01	Plaistow	Timberlane Middle school	poor ventilation		pilot	1,133	1+
2medium	11/2/01	Raymond	Iber Holmes Middle School	poor ventilation			760	
2medium	7/11/00	Northwood	Northwood Elem. School	poor ventilation		pilot	488	
2medium		Fitzwilliam	Emerson Elem School			4.0%	189	8
2medium		Goffstown	Mt View Middle School			6.0%	1,300	78
3low	1/21/03	Penacook	Merr Valley Middle School	water damage				1
3low	1/8/03	Farmington	Valley View Elem School	poor ventilation				1+
3low	1/22/02	Farmington	HW Junior High School	poor ventilation		pilot	359	98
3low	10/29/01	Somersworth	School Admin Unit					
3low		Winchester	Thayer High School				188	
3low		Litchfield	Griffin School	MCS			564	1+
3low		Manchester	Gossler Park Elem School			pilot	421	
3low		Freedom	Freedom Elem School			10.0%	254	93
3low	8/28/01	Manchester	Goffs Falls Elem School	too hot, thermal stress			608	multiple
3low		Tamworth	Brett School			5.0%	310	15
3low	9/11/02	Lebanon	Mount Lebanon School	poor maintenance			270	<10
3low	6/25/02	Exeter	Coop Middle School	past flooding			1,357	1+
3low	6/18/01	Moultonboro	Moultonboro Academy	child passing out			215	
3low		Stratham	Coop Middle School			pilot		
3low		Troy	Troy Elementary School				196	
3low		Whitefield	White Mtn Regional School			5.0%	500	25
					Totals		**12,676**	**358**

Priority List of NH Schools with Indoor Air Complaints, January 2002.

TOTAL P.02

P.02

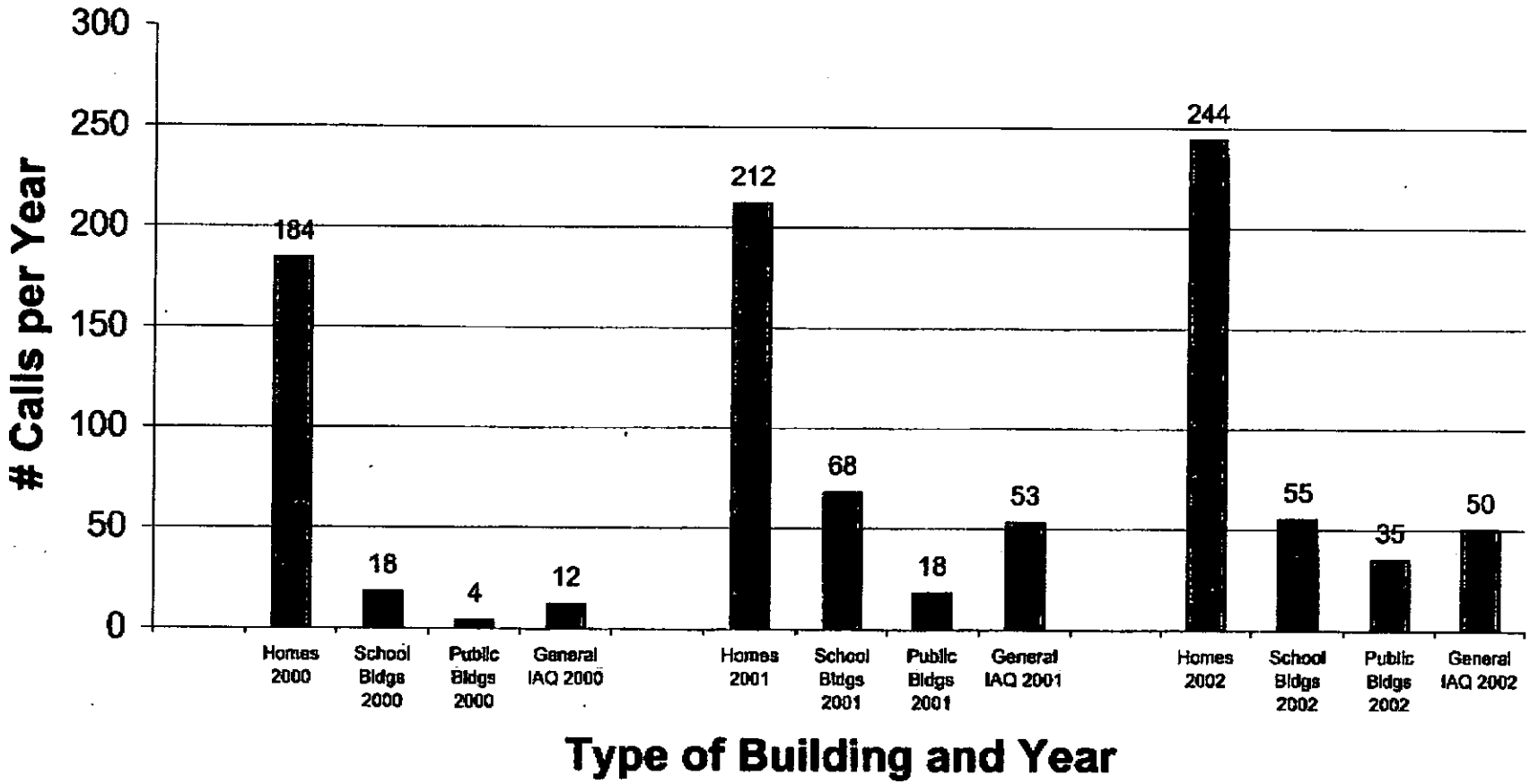
ATTACHMENT #2

ATTACHMENT #3

P.02

TOTAL P.02

State Indoor Air Pollution Consultations Provided to the Public by Type of Building. New Hampshire. 2000-2002



MAR-21-2003 15:59

Speakers

SENATE ENVIRONMENT COMMITTEE

Date March 12, 2003 Time 10:15 a.m. Public Hearing on **Bill # SB167**

relative to indoor air quality assessment in public school buildings.

(Please print) ***Please check box(es) at left that apply.***

SPEAKING?	FAVOR	OPPOSED	NAME	REPRESENTING
☑	☑	☐	Sen Iris Estabrook	Dist 21
☐	☑	☐	Sen. Sylvia Larsen	Dist 15
☑	☐	☐	Matthew Caldwell	DHHS
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Testimony

State of New Hampshire
Department of Health and Human Services
Office of Community & Public Health
Bureau of Environmental and Occupational Health (BEOH)

Facsimile Cover Sheet

To: Susan Bridge
Company/Agency: Senate Environment Committee
Phone:
Fax: 271-3027

From: Matthew Cahillane MC
Agency: NH Dept of Health
Phone: 271-4664
Fax:
Date: 3/18/03
 # Pages incl. cover page: 2

Comments: Ms. Bridge,
Attached is the Priority List of NH Schools with Indoor Air Complaints.
Thanks you for inserting it into the record.

CONFIDENTIALITY NOTICE**
The documents accompanying this FAX transmission cover contain information from the OFFICE OF COMMUNITY AND PUBLIC HEALTH which is confidential and privileged. The information is intended to be for the use of the individual named on this transmittal sheet. If you are not the intended recipient, be aware that any disclosure, copying, distribution or use of the contents of this FAX transmission is prohibited. IF YOU HAVE RECEIVED THIS FAX IN ERROR, PLEASE NOTIFY US BY TELEPHONE TO PERMIT US TO ARRANGE FOR THE RETRIEVAL OF THE ORIGINAL DOCUMENTS AT NO COST TO YOU.

Priority List of NH Schools with Indoor Air Compaints. January 2002.

Priority Level	Date Reported	Town	Address2	Health Concern		% Asthma	# Students	# At Risk	
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		Troy	Troy Elementary School				196		
		Whitefield	White Mtn Regional School			5.0%	500	25	
				Total Calls					

Matt
4072

19 OS

4/5/03

As indicated on the cover, this bill is the result of a 2002 study committee, created under HB 329. HB 329 originally called for all public school buildings to have annual fire inspections and meet state air quality standards. The House was concerned with the broad consequences of these requirements and chose to study the issue.

These efforts were in response to the August 200 Turner Group report to the state board of education on the condition of our public school facilities. This reports noted serious safety concerns. Thirty nine percent of schools reported fresh indoor air as a facility weakness.

In studying this issue, we discovered some interesting facts. Schools have unique qualities which make air quality a problem: 1. the age of the buildings, increased risk from outdated systems 2. lack of dollars to renovate and maintain those systems and overcrowding. Schools have four times the number of occupants per square foot as office buildings. These factors are compounded by the fact that children breathe in more air/minute than adults. There are currently no requirements to report school health status information but there have been multiple school closings for air quality related problems

This bill, SB 167, takes modest first steps at addressing this problem. First, it includes environmental conditions, along with sanitary conditions, in what the department can investigate. It further directs HHS to monitor and report on the health status of public school buildings. SB 167calls for an assessment of the status of air quality in our schools and for public reporting.. This bill will strengthen HHS' ability to deal with environmental problems and puts some limits around the timeframe for doing so.

Ultimately, improvements in data collection will prevent illness and lower costs. As you can see from the EPA article I've provided, improvements in air quality will also improve student achievement. This bill will start us down that road. I hope you will take it.

EPA

United States Envrionmental Protection Agency

Indoor Environments Division
Office of Radiation and Indoor Air

EPA 402-F-00-009
August 2000



Indoor Air Quality and Student Performance

The Problem

The Cause

The Consequences

Recent data suggest that poor IAQ can reduce a person's ability to perform specific mental tasks requiring concentration, calculation or memory.

How Does Indoor Air Quality Affect A Child's Ability To Learn?

Poor indoor air quality (IAQ) can cause illness requiring absence from school, and can cause acute health symptoms that decrease performance while at school. In addition, recent data suggest that poor IAQ can reduce a person's ability to perform specific mental tasks requiring concentration, calculation, or memory.

Air in most indoor environments contains a variety of particles and gaseous contaminants. These contaminants are commonly referred to as *indoor pollutants* when they affect human health and performance. Indoor temperature and relative humidity can also affect health and performance directly, and can affect human performance indirectly by influencing the airborne level of molds and bacteria.

Most often, poor indoor air quality results from the failure to follow practices that help create and maintain a healthy indoor environment. Common examples include failure to:

- Control pollution sources such as art supplies and laboratory activities
- Control temperature and humidity
- Control moisture and clean up spills
- Ventilate each classroom adequately
- Adequately perform housekeeping and maintenance operations
- Use integrated pest management to minimize the use of pesticides

Failure to deal adequately with any of these issues may go unnoticed, but can and often does take its toll on health, comfort, and performance.

Specific Studies

Schools should be designed, built, and maintained in ways to minimize and control sources of pollution, provide adequate exhaust and outdoor air ventilation by natural and mechanical means, maintain proper temperature and humidity conditions, and be responsive to students and staff with particular sensitivities, such as persons with allergies or asthma. Adverse consequences can easily result when IAQ problems are not addressed properly.

Effects from Building-Related Illnesses

Children do not perform as well when they are sick or absent from school. Indoor air quality problems can result in absences because of respiratory infections, allergic diseases from biological contaminants, or irritant reactions to chemicals used in virtually every part of the school. Some conditions in the school environment are closely associated with the incidence of sick building syndrome and asthma symptoms[1, 2], and asthma-related illness is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year.[3] In addition, persons with asthma or other sensitivities may

Asthma-related illness is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year.

have reduced performance in the presence of environmental factors that trigger their asthma. All of these "building-related illnesses" result from the lack of effective indoor environmental quality management. In extreme cases, schools sometimes have to be closed until problems are investigated and solved.

Effects from Mild Symptoms of Distress

What about people who do not have a diagnosable illness, but simply don't feel well? People may report feeling lethargic, having headaches, having a mild sore throat or itchy eyes; or they may have a sense that the air is "stale," "stuffy," or "too dry." When these types of symptoms are made worse by being in a building, they are referred to as "sick building syndrome."

Estimated Loss in Performance

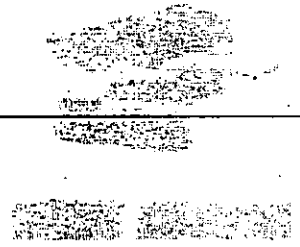


Motivation can often overcome small burdens of environmental stress so that children's performance may not decline. However, continued environmental stress can drain children's physical and mental resources and ultimately affect their performance. Evidence from office workers suggests that when individuals experience just two symptoms of discomfort, they begin to perceive a reduction in their own performance. That perception increases as the number of symptoms increases, averaging a 3% loss with 3 symptoms, and an 8% loss with 5 symptoms.[4] It follows that when large numbers of students and staff experience signs of discomfort related to the air inside their school, teaching and learning performance will likely degrade over time.

Measured Loss in Performance



Studies relating direct performance measurements to changes in indoor air quality are just now emerging. For example, a recent European study of 800 students from eight different schools provides data on IAQ, health symptoms, and students' ability to concentrate.[5] In the study, carbon dioxide measurements were taken in the classrooms, and students were given a health symptom questionnaire. A computer-based program scored their ability to concentrate. Carbon dioxide itself is not a health threat at levels found indoors, but since the main source of carbon dioxide in buildings is exhaled breath, and the main mechanism for removal is ventilation, high carbon dioxide levels in classrooms are an indication of low ventilation rates and, therefore, high levels of pollution. In classrooms where carbon dioxide levels were high (low ventilation rates), student scores on the concentration tests were low; and their health symptom responses were high. The results were statistically significant and tend to confirm that with IAQ management, including source control and adequate ventilation, student performance can improve.



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Committee Report

STATE OF NEW HAMPSHIRE

SENATE

REPORT OF THE COMMITTEE

Date:

THE COMMITTEE ON Environment

to which was referred Senate Bill 167

AN ACT relative to indoor air quality assessment in public school buildings.

VOTE: 3-2

Having considered the same, report the same with the following resolution:
Resolved, that it is: **INEXPEDIENT TO LEGISLATE.**

Senator Russell E. Prescott
For the Committee

SB167 Docket

Next|Prev|Results List|Main|Bill Status

Bill Title: relative to indoor air quality assessment in public school buildings.

Date	Body	Description
1/30/2003	S	Introduced and Ref. to Environment; SJ 3, Pg.39
2/7/2003	S	Hearing; March 12, 2003, Room 104, LOB, 10:15 a.m.; SC9
3/14/2003	S	Committee Report; Inexpedient to Legislate,[03/20/03]; SC14
3/20/2003	S	Inexpedient to Legislate, RC 16Y-6N, MA === KILLED ===; SJ 9, Pg.117

Next|Prev|Results List|Main|Bill Status

Docket Abbreviations