

Final report of SEPHLI project  
Douglas S. Campbell, MD, MPH  
November 2005

**Project Title:**

“An Evaluation of the Decontamination of Clandestine Methamphetamine Labs in North Carolina as Regulated by Recently Passed State Rules”

**Abstract:**

A research project was developed to determine if the decontamination of clandestine methamphetamine laboratories (“meth labs”) in North Carolina was performed according to state-wide Rules recently passed by the North Carolina Commission for Health Services. This project involved several steps including:

1. developing a protocol to investigate 40 meth labs to determine if they were decontaminated according to the decontamination rules and if they were cleaned according to the paperwork submitted by the property owner to the local health department;
2. discussing this protocol with a committee of Local Health Directors (LHD’s) (county health directors) who were involved in environmental issues of the state in order to get their support for the project;
3. contacting the health director of each county or regional health department in the state to explain the project and request them to report every meth lab that was seized by law enforcement in their county to the Occupational and Environmental Epidemiology Branch (OEEB);
4. investigating each reported meth lab by using a protocol developed for the study and a questionnaire designed to gather data in an unbiased manner, ready for analysis once data collection is complete;
5. analyzing data;
6. presenting results in an appropriate setting.

Steps 1-3 were completed; step 4 is ongoing; steps 5 and 6 will be performed when data gathering is complete.

This project provided me the opportunity to develop my skills in visualizing and thinking inductively, which is one of my goals for leadership development with SEPHLI. It also gave me the opportunity to develop my skills in communicating clearly and effectively with people at several levels: people who report to me, my peers, my supervisor, my advisor, and people in decision-making positions (such as all the 100 county LHD’s) who would have to work with us and would be essential for the success of the project. Communication occurred in face-to-face meetings, in meetings with small groups, and in meetings with large groups of people in which I led the meeting. One of my leadership goals was to get more comfortable and effective at communicating in large groups and this project offered me the opportunity to develop that skill. As the project continues after the completion of my SEPHLI year I will continue to work on these skills.

### **Introduction/Background:**

Clandestine methamphetamine labs, or meth labs, are places where individuals manufacture illicit methamphetamine. The synthesis of methamphetamine in these labs uses ingredients and equipment that is available in the general marketplace. The meth is manufactured in places such as rental homes, apartments, garages, motels, mobile homes, and vehicles. During meth manufacturing the properties (“labs”) become grossly contaminated with ingredients, toxic by-products, and methamphetamine. During the cooking process the labs are highly dangerous to the occupants due to chemical exposures, fires, and explosions. The number of labs discovered and seized by law enforcement in North Carolina and many other states has increased dramatically over the past several years. The number has approximately doubled every year in North Carolina. In 2004, 332 labs were discovered and seized by law enforcement agents in North Carolina.

Because the labs are so toxic and potentially dangerous it is very important that they be cleaned up effectively after they are seized by law enforcement and before they are re-occupied. Several states have passed rules and laws addressing the decontamination issue. North Carolina began addressing the problem of meth contamination by enacting legislation governing property cleanup in 2003 and passing temporary rules in late 2004. The North Carolina Commission for Health Services passed permanent Rules in January 2005. There are very few scientific studies demonstrating the effectiveness of any methods in attaining adequate cleanup of the contaminants. Due to limited study data, North Carolina chose methods in its rules that are logical but are not based on any other state’s rules.

Another factor affecting the choice of decontamination rules was that the North Carolina state legislature felt that it could not require local health directors or any other health officials to take the unfunded responsibility of ensuring that decontamination of meth labs was appropriately accomplished. The Rules place the responsibility of decontamination on the owners of the affected properties and not the local health departments. Under the Rules, the LHD is required to review the written plan for the decontamination, to verify that all elements of the cleanup are addressed in the plan, and to store the plans for three years. The LHD’s are not required to inspect the property before or after decontamination, and are not required to certify in writing that the decontamination was actually performed or that the building is safe to re-occupy. As a result, it is up to the property owner to clean up the property prior to re-habitation with no provision in the rules to ensure that this was actually accomplished, or was done in a manner that would result in a safe, habitable building.

This rule process raises two important questions:

1. If there is no oversight of the cleanup process and the property owner is allowed to perform his or her own cleanup without any oversight, how likely is it that an adequate decontamination will be performed?

2. Even if the decontamination is performed according to the methods required in the Rules, is decontamination adequate in reducing contaminants to levels that might be considered “safe” for persons to re-occupy the labs?

At this time these questions cannot be answered since no other state has used the exact methods in the Rules enacted by North Carolina. No scientific studies have been reported to determine if the cleanup methods in the North Carolina Rules actually result in decreasing contaminants to a safe level. Since the North Carolina Rules allow persons to re-occupy these properties after decontamination in accordance with the Rules, then it is important that health officials know that the rules are effective.

### **Project Description, Objectives and Methodology:**

The main study question is: Are the meth labs decontaminated in a manner that is consistent with the reports submitted by the property owner to the Local Health Director (LHD). A secondary study question is: Is a visual inspection an adequate method for evaluating whether the property owner has cleaned the lab in accordance with the Rules?

This study was developed over the course of several months with input from several employees of the OEEB and other employees of the North Carolina Division of Public Health. These individuals had either direct experience with the meth lab issue or experience in developing and implementing epidemiologic studies.

In order to answer the two study questions, the overall project goal for this study is to determine if the cleanup process is conducted according to the North Carolina Rules. Inspections were used as the evaluation method since this procedure would be used by LHD's to determine the cleanliness of the labs if the LHD's chose to do so. Further, the use of inspections in this project would not introduce elements that were not included in the rules. For example, if wipe testing for methamphetamine residues were used as the measurement then this would be introducing procedures that were not part of the decontamination process required by the Rules. Sampling results would then introduce an arbitrary variable that was not part of the normal evaluation process as specified in the North Carolina Rules. Further, by using inspections as the determining factor for this study, insight would be gained to guide LHD's or other health officials in performing future inspections of meth labs in their counties. These LHD's could use the knowledge gained in this study to guide their decision whether to inspect. Another benefit of this project would be to allow the questionnaire developed for this study to guide the development of a questionnaire for use by LHD's if they choose to conduct inspections in the future.

It is important that the inspections done in this study should not influence the decontamination process in order to avoid entering modifying effects into the study. In the case of this study, the modifying effect would be influencing the property owner to be either more or less conscientious in performing the cleanup process, or deciding who will perform the cleanup process. This bias would make the results of the study different from a situation in which no inspections were done and the property owner was not

influenced by this study. Therefore, in designing the study it was important that the inspections be performed as unobtrusively as possible.

Several methods were incorporated into the study in order to avoid bias in the outcome of the decontamination process. These methods were:

1. The property owners would be contacted and told that we would be making a visit to the property without telling them the purpose of the visit.
2. The property owner would be told that we would not be involved in the decontamination process and that we were just observing.
3. The property owner would be told that the local health department was their primary contact for questions about the process and that we were not involved in advising the property owner.

It was decided to inspect half of the properties both before and after decontamination was performed, and to inspect half the properties only after decontamination was performed. This would enable a comparison of the two groups, and would allow an assessment whether the timing of the inspection influenced the decontamination process.

A further consideration in designing the study was that a property owner could choose to clean up the property himself or herself, or could choose to hire someone else to perform the decontamination process. It was important that the study evaluate the outcome of these two methods of decontamination to determine any difference in outcomes of these two types of decontamination. To accomplish this evaluation, half of the properties to be inspected would be cleaned by the property owners themselves, and half of the properties would be cleaned by someone else.

In order to achieve the above two methods of stratification, properties to be inspected would be randomized in two ways:

1. Half of the properties would be decontaminated by the property owner and half would be decontaminated by someone else (for example, a contractor).
2. Half of the properties would be inspected both before and after decontamination and half would be inspected only after decontamination was complete and the paperwork was submitted to the LHD.

Therefore, one quarter of the properties in the study would be decontaminated by property owner and inspected before and after decontamination, one quarter would be decontaminated by property owner and inspected only after decontamination, one quarter would be decontaminated by outside persons and inspected before and after decontamination, and one quarter decontaminated by outside persons and inspected only after decontamination. Based on discussions with a qualified statistician at the North Carolina State Center for Health Statistics, a total of 40 properties would be inspected, resulting in 10 properties in each of the four groups described in this paragraph.

The following types of properties would be included in the study and inspected: single detached homes, duplexes, triplexes, quadriplexes, mobile homes, condominiums.

To randomize the properties, the following steps were taken:

1. The first property reported that fit the criteria of types of properties in the study would be inspected before and after decontamination, the next property would be inspected only after decontamination, and then for each subsequent qualifying property alternating inspection types would be used.
2. The same alternating strategy would be used for properties cleaned by the property owner vs those cleaned by someone else until a total of 20 of each was inspected.

A questionnaire was developed and field-tested. Inspections would be done by employees of OEEB. Each “inspector” would be trained in the use of the questionnaire, and to carry out the inspection process in a standardized manner in order to avoid biasing the evaluation and the decontamination process. The questionnaire was developed with advice from a qualified statistician to ensure that the data generated by the questionnaire could be readily entered into and analyzed using the Epi-Info software. The local health departments were not to be asked to contribute their personnel to conduct the study to ensure that inspections were consistent and standardized. This also minimized time commitment of the counties participating in the study, and increased the likelihood that LHD’s would agree to have the study performed in their county.

A protocol for the study was developed in consultation with the attorney for the Division of Public Health (DPH) and was approved by the Institutional Review Board (IRB) for the DPH. Prior to the start of the study a conference call was held with a sub-committee of the Local Health Directors Association. Prior to this call they were provided a copy of the approved protocol for their review. During the call, the study was explained to the committee, they were encouraged to ask questions, and the committee members were asked if they would support the conduct of the study throughout the state. The sub-committee agreed to support the study. Following this conference call, a group of employees in the OEEB was organized and tasked with calling each of the 100 LHD’s in the state. These telephone calls began June 22, 2005. Each LHD contacted was told about the study and asked if he or she would be willing to have the study conducted in their county or region. More than 90% of the directors contacted were willing to have the study conducted in their county. Many expressed gratitude that the state was willing to evaluate the effectiveness of the Rules. Of the health directors who declined having the study take place in their county, the majority stated that the reason was inadequate personnel. The final calls to LHD’s were completed in early July 2005, at which time we began accepting reported meth labs into the study.

### **Results:**

As of November 14, 2005, seven meth labs have been reported to OEEB. Of these, five met inclusion criteria into the study. Of these five, we were able to contact two property owners who agreed to allow OEEB personnel to come to see their property. The first property was inspected prior to its decontamination on July 15, 2005. The

second property was thus randomized to be inspected at the completion of the decontamination process and has not yet been inspected. No properties were reported by LHD's to OEEB from early September until early November. Based on information submitted to OEEB through other reporting mechanisms it has been determined that meth labs are still being seized by law enforcement but that the numbers of labs has decreased from the previous year. It has become apparent that our "passive" surveillance system that depends on LHD's to notify OEEB about seized labs may not be effective. Therefore, study personnel will begin calling LHD's in counties where we know labs have been seized to determine if they are aware of more seized labs in their county and to get the names and contact information on property owners of these labs. Study personnel will also determine why LHD's have not contacted OEEB about seized meth labs for two months, and appropriate steps will be taken to improve reporting of these labs in the future.

The goal of this project is to inspect a total of 40 homes. The project will continue after the SEPHLI year is complete so that the valuable information of the study can be obtained, analyzed, and disseminated.

Important accomplishments of the study to date include:

1. Developing a study protocol that is epidemiologically sound and approved by the IRB
2. Developing a questionnaire that will accurately obtain information that can be readily entered into a database and analyzed
3. Obtaining the approval of a sub-committee of the LHD Association to pursue the study, and then telephone contact with and approval of more than 90% of LHD's to allow the study to proceed in their county
4. Developing a standardized approach for inspecting meth lab properties
5. Field testing and refinement of the questionnaire to be used. It will be further refined based on feedback obtained from the field-testing.
6. Assembling a group of employees in OEEB who can evaluate and follow the study protocol
7. Developing a working relationship with law enforcement officials at the local and state levels

Barriers encountered in the development of this project:

1. The most difficult parts of this project were to develop a research protocol that would answer the study questions in a valid manner, could be performed by a small number of individuals in a consistent and reliable manner, was not expensive, and would be accepted by the LHD's. This process required extensive discussions with employees of OEEB, the State Center for Health Statistics, the chief of the Epidemiology Section, the attorney for the Division of Public Health, and my mentor, Dr. Ronald Levine. There were disagreements and long discussions among these individuals about the proper protocol, which required frequent re-assessment of the methods and how to account for anticipated problems. Many individuals in OEEB who would be involved in the inspections had concerns about personnel time commitments and safety issues associated with property inspections. A unifying factor that was kept the discussions focused was the need to evaluate the effectiveness of the Rules governing decontamination of meth

labs. The discussions and debate were simplified and much more productive when that goal was kept in mind.

2. Another barrier was developing a questionnaire that would be instrumental in gathering all the information that was needed for each inspection and to do so in a manner that did not introduce bias into the data gathering process and that could be administered in a similar manner by every inspector. Development of this questionnaire began with the principal investigator (PI) developing a skeleton outline and asking each person in the OEEB study group to give his or her reactions and suggestions. Following this, successive drafts were developed and presented to the group for further review. The questionnaire was reviewed by a qualified statistician in the State Center for Health Statistics. An interim questionnaire was field-tested on a property inspection. Further changes were made in order to develop a finalized questionnaire.

3. A further barrier was obtaining the consent of all LHD's to allow the study to occur in their county. Most of these LHD's were familiar with the meth lab problem and most were more than willing to allow the study in their county. A small number of directors were resistant to the study and this required discussions and convincing them of the need for the study. The total duration of time required to call all the LHD's was substantial, but was minimized by the development of a group of OEEB personnel who organized the calling, and recorded the LHD responses in a database developed for this study.

4. As noted above, a significant barrier was getting reports from LHD's or their designees about all meth labs seized in their county. Following an initial burst of reports there was a two month period of time in which no further reports were received by OEEB. One employee in OEEB routinely receives reports of seized meth labs as part of that employee's normal job but this job is not related to this SEPHLI project. This information has made it apparent that OEEB is not receiving all reports if seized labs. To correct the problem of under-reporting the following will be done:

- a. Arrangements will be made with the State Bureau of Investigation (SBI) to include the PI on a weekly email listserve update of labs seized during the previous week
- b. The employee who receives routine reports of seized labs will double check her reports with those from SBI
- c. Calls will be made by OEEB to LHD's in counties where we learn that meth labs have been seized to determine the identity and contact information for the property owner of each lab, and OEEB will then make contact with that person. During these calls to the LHD, OEEB will determine why the meth labs were not reported to OEEB by LHD's as they had promised, and steps will be taken to correct this problem.
- d. Reminder emails and calls will be made to LHD's as necessary to remind them to call OEEB to report seized meth labs

5. Another barrier was the amount of time necessary to design and carry out the study. The PI was involved in many other duties, and had to rigidly schedule his time to make this study possible. Frequently the PI had to delegate his normal duties to other

employees of OEEB in order to work on this study. Employees of OEEB who helped develop the study and who would do the inspections had to assess their other duties and determine how they would schedule the time necessary to perform the inspections. The PI was out of town on OEEB business for several weeks during the study period. This absence led to lack of continuity in performing the study, and may have resulted in loss of contact with LHD's. The PI should have appointed a secondary investigator to take charge of the study during the times when the PI was out of town. The OEEB moved to a new building during the designing and early implementation of this study, and the change of telephone numbers during the move may have led to difficulty in LHD's contacting the PI and other study personnel to report seized meth labs. It would have been beneficial to have made follow-up contact with LHD's to remind them to report meth labs to OEEB, and to ensure that they were aware of our new telephone numbers.

My mentor, Dr. Ronald Levine, helped me develop the study protocol. He attended the initial meeting with OEEB personnel who were asked to help develop and participate in the study, and he made valuable comments that helped this process. Later in the study he met with me, reviewed the protocol, and gave valuable insight about it.

**Conclusion:**

This project is vital to the determination whether the Rules adopted by North Carolina for the decontamination of meth labs are being followed by property owners who have property that had an identified meth lab, and if the rules are effective in leading to cleaned properties. Without this study these questions may remain unanswered. If the rules are not effective then people may re-occupy unsafe properties and they may potentially be exposed to harmful chemicals.

Future actions could depend on the outcome of this study. For example, if the study shows that effective decontamination is only performed if inspections are made before and after the cleanup process, then it may be necessary that LHD's be required to conduct inspections. To perform these inspections it will be essential to conduct training concerning protocols and inspection methods. If the study shows that decontamination is not performed appropriately by property owners themselves but is performed appropriately by individuals other than the property owner then it may be necessary to develop rules that encourage decontamination be done by persons other than the property owner.

This branch must continue to be actively involved in the public health concerns of meth labs. Performance of this study will demonstrate to counties and to the state as a whole that OEEB is committed to ensuring that meth labs are cleaned appropriately.

When the study is complete and the results have been analyzed it will be important to disseminate the results to the LHD's, the legislature, the Commission for Health Services, and to the general public. Any lessons learned in the study may be applied in the state and may be used to improve the decontamination process. If the study illustrates the Rules are effective, then the legislative goals of meth lab decontamination have been accomplished. If, however, the study shows that the Rules are not being followed or if they are not effective in achieving decontaminated properties then the Rules will have to be re-evaluated and modified as necessary.