

**The Erosive Effects of Poor Training Coordination In A Technical Environment**

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**Agency: Department of Health and Environmental Control**

**Submitted: February 1, 2007**

## I. PROBLEM STATEMENT

During my tenure as a manager at the laboratory of the Department of Health and Environmental Control (DHEC), I have observed periods of turnover like most organizations. However in each instance, while considering how to address my turnover, I had many thoughts about why my turnover occurred. I also contemplated how to best deal with this inevitable change that would always be a reoccurring event in managing my staff. Most of my attention was focused on training of my newly hired staff. How to train them efficiently to assure they received training which prepared them to do their jobs and ultimately acquire the skills needed to complete tasks independent of supervision, became the challenge.

I fully realized that training was a necessary part of my work process. Training in the work place comes down to the old Nike cliché, "Just Do It". Yet, to the contrary, I really questioned was it this simple. Thus, the origin of my Certified Public Manager (CPM) project was based upon the questions I considered over the years having dealt with employee turnover and the necessary training aspect required to transition new staff into the work process.

Most of my questions were related to the various approaches to training staff. Is there a difference in the end result of training if it is purely On The Job Training (OJT) versus more structured training? What are the positive and the negatives of both of these? Which of these approaches are more prevalent in the work place? What are the effects on the success and the failure of the overall process?

Based upon my own 20 plus years of experience in varied laboratory settings, most relied heavily upon OJT as a primary approach. This was usually the case due to the convenience of passing information from one employee to the next. Most organizations never questioned their training processes even when things were not going well. They all seemingly believed that

training could be taken for granted. The difficulty of identifying training specific to unique needs encourages the idea of OJT as the most viable option. A more formal or structured approach is usually the secondary option.

I also question is there any coordination of training and if so, who coordinates the training? My experiences have all been the same. Training in most laboratory settings is always coordinated by front line supervision or management. All of the organizations I have been affiliated with have made front line management and supervision not just responsible for coordination of the training of staff, but ultimately responsible for the actual training itself. Needless to say, this is a major undertaking for any manager. The problem is this becomes an adjunct function for most front line management and supervision. This results in poor coordination of the training and over time has a direct affect on work process efficiency. It results in negative work events such as low productivity, turnover, and protocol deviation which can be "erosive" over time to the overall work process.

Since training is a necessary part of any organization, it should easily align with short and long term organization goals. There has not been a lack of commitment to train staff at DHEC's laboratory. However, there are questions regarding the approach used to accomplish training. Like most state agencies, DHEC finds itself losing a large number of experienced staff within a small window of time. Training will be a major factor in the future of the agency regarding the transfer of knowledge to less experienced staff. The laboratory is not losing staff due to retirement, but indirectly as experienced staff move to vacated positions within the agency, a greater need to train is created. If there is not an adequate mechanism in place to address training needs in an efficient

manner, erosive events of low productivity, protocol deviation, and turnover could possibly occur. The goal of this project was to meticulously examine the various approaches to training. It sought to examine what information might be available to help answer my questions as to best approaches and which approach merits the most efficient and effective way to train staff.

## **II. DATA COLLECTION**

Three sources were selected to acquire data and information for my research: (1.) Survey- sent nationally to laboratories; (2.) Interviews- chemists and directors from DHEC Environmental Quality Control (EQC); (3.) Relevant Literature Sources- (books and articles). My survey was sent to 174 laboratories across the country. The survey sent was composed of 10 questions, see appendices, page 17, (Attachment II). Questions for the survey were very general due to the sensitive nature regarding laboratory certification for each laboratory. In order to increase the potential of labs responding to the survey a clear explanation of the intent regarding use was provided. Therefore no mention and reference are made to labs to protect their identity. The results from the survey were graphed to provide a quick visual assessment of the results. A brief explanation of each response is provided below each graph. Please refer to appendices (pages 20-23, Attachments III.- VI.). These will be referenced later.

I interviewed 12 chemist from DHEC's EQC laboratories to get feedback regarding their training experiences upon joining the agency. Employees interviewed reported to different supervisors, were from different labs and were hired at different times between the years, 1991-2006. They had all been trained using mostly OJT. Some had participated in some external training. There were mixed feelings regarding how much impact the external training had regarding the

performance of their assigned job duties. Most of the external training was associated with new instrumentation purchased. There was very little mention of external training beyond instrumentation training to enhance skills needed to do assigned task. All felt OJT was the best approach to training new staff for the laboratory. Comments from the interviews also indicated that, in some instances, better trainers were needed. All felt that adequate reference resources, such as certified methods and Standard Operating Procedures (SOPs), were present. Each employee was asked what approach they would take to train staff. They all felt OJT was the most logical approach to train new staff. All employees felt they had been trained adequately. Please refer to page 24, appendices, ( Attachment VII.) for questions asked during the interview.

Managers of each of the sections from EQC laboratories completed the survey sent nationally, refer to page 17, appendices, (Attachment II.). They each responded to using a mixed approach to training rather than just OJT. All seemed to feel that external training was available, but this was mostly vendor related training associated with the purchase of instrumentation. Comments were also made regarding the age of instrumentation, which might deny the possibility of training for a specific instrument. In this situation OJT would be used for that particular instrumentation. Each manager was of the opinion that they were doing a good job regarding training their staff. They all were investing time and money for training, as available, for staff.

Sandra Flemming, Director of the Analytical and Radiological Environment Services Division (ARESD) for EQC labs, was interviewed. She has been with the agency for 23 years and been directly associated with the laboratory for her entire tenure. Ms. Flemming is responsible for the overall functions of the agency's environmental labs, which monitor South

Carolina's drinking and waste waters. She is responsible for the radiological chemistry lab, inorganic chemistry labs, organic chemistry labs, microbiological and sample characterization labs, and the automated analysis/data management lab. Ms. Flemming felt that training in the laboratory was more intense, currently, than when she started in the laboratory some 23 years ago. She spoke of training being more one on one and hands on, meaning OJT in its purest form. She felt that managers were responsible for training along with utilizing experienced senior staff. However, she did emphasize that training should only be done by a limited number of staff to assure continuity and proper training. She echoed earlier comments that OJT was an approach used in training staff in the lab, but supported by external training usually available from vendors when instrumentation was purchased. Comments were made regarding aged instrumentation which made it difficult to provide external training. Ms. Flemming made an interesting point that excellent external training was made available through the Environmental Protection Agency (EPA) during the early eighties. This was training specific to environmental testing to enhance knowledge and skills related to pesticide and herbicide analyses. Due to the EPA losing funding, this training is no longer available. Ms. Flemming was asked how she felt concerning turnover of staff being more frequent with younger staff and if she felt training had influence on this behavior. She did not feel training had any influence on this behavior, but economics were more the culprit. The matter of availability of training was discussed. She felt there was adequate external training for instrumentation, but very inadequate training for method specific training needs. Ms. Flemming felt training was a priority in her labs but did not like the idea of a training coordinator for the laboratory. She felt it would be hard to find someone with the expertise to handle this task and felt that this could be handled through a lab's Quality Assurance office. She felt that staff should be able to begin working semi-

independent after about 3 months of training in the laboratory. Ms. Flemming felt staff should be taught basic Good Laboratory Practices (GLP) from SOPS and certified methods relevant to the work being performed. Instrumentation and external training should come later, after OJT, to allow the new employee to gain some experience. Ms. Flemming was investing in her staff by spending more than 30,000 dollars annually. When asked if she felt she was getting a return on her investment in training, she responded, “ yes”, this was evident from the successes that her labs had regarding analysis of samples and bringing new instrumentation online. She did think; however, that the lab could do better job of sharing knowledge among staff when external training was done. Please refer to appendices (pages 25-26, Attachment VIII.) for questions ask during this interview.

Another interview was conducted with Carol Smith, the Director of EQC’s Laboratory Certification Division. She has been with the agency for 25 years. Her division is responsible for certifying all labs in South Carolina doing environmental lab work. This includes private, municipalities, and industrial labs. Her division also is responsible for certifying any laboratories which desire to do contract environmental testing for the state of South Carolina. I asked Ms. Smith how she felt staff should be trained. She felt that staff should be trained by first familiarizing them with the regulations from Federal Register, if the work is environmental work, related to EPA programs. She emphasized the importance of footnotes that were overlooked by many labs performing this type of work. Ms. Smith also felt that only knowledgeable trainers should be training, even if this person was not the manager. She agreed with others interviewed that OJT was the most prevalent approach to training. Ms. Smith felt that training in some labs became nonexistent or limited based upon a lack of time and money. She indicated some labs don’t have the resources to do the work or the money to invest in training. She commented “they are trying to do

the best they can with what they have”. Ms. Smith felt training should be structured, even if it is OJT, to provide the best opportunity for the employee to be successful and have a sense of confidence to do his/her jobs. She commented on often encountering labs where staff have been poorly trained, evident by their lack of knowledge. The comment, “I’m doing what I’ve been told to do” is heard all too often according to her. She felt training would encourage staff to stay, but felt there was a lack of readily available training that is method specific. Most external training again is only provided by vendors for instrumentation purchases. There was mention of training available from the American Water Works Association (AWA) and Water Environmental Federation (WEF). However, due to a lack of funding, some of the training made available has been scaled back. Ms. Smith emphasized that it is important for labs to invest in training and make it a priority in order to be successful. Please refer to appendices (pages 27-28, Attachment IX.) for questions asked during this interview.

### III. DATA ANALYSIS

My research answered all the questions I had concerning training in technical environments while awakening my greatest fears. There are obvious differences between OJT and a more structured approach used in conjunction with OJT. Overwhelmingly most of the labs surveyed were using a mixed approach to training, but what does this really mean? I discovered from my interviews a lack of confidence that employees of the laboratories in general are **getting all of the information they need** and there is a void in technical environments regarding training. Despite OJT being a very convenient vehicle for training; I found it too heavily relied upon. I also question the real understanding and more importantly an appreciation for what I will phrase as “the science of training”. During my research I found a great book by Nanette Miner entitled “The

Accidental Trainer”. This accurately describes training in most technical environments. We accidentally find ourselves having to train while not truly being prepared to handle this important part of our work process. In order to get the end result we desire from training, it must be formalized even if the majority of the training is OJT. As Ms. Miner states in her book, this just simply means “organizing what is already occurring in your company” (*Miner, Accidental Trainer, p.127*). Most laboratories have grown comfortable with the idea that they have SOPs and methods in place. However, these documents will not come to life in a laboratory setting unless they are used appropriately in the training process. Both directors from EQC laboratories, Ms. Flemming and Ms. Smith alluded to the lack of reference made to SOPs and methodology. This is happening for a reason.

Many labs do not realize that you have to coordinate training in order to have any chance of continuity. The best chance to ensure that information does not get “lost in the translation” is to control who trains but more importantly “train the trainer”. Many labs assume that the most knowledgeable and skilled chemist is the best choice to train when using OJT without consideration of assuring that the person is prepared to train new staff. This will mean that a commitment has to be made to training regarding time, and in some instances, money. Technical environments do not always appreciate the need for training that does not relate to technical matters. It should be remembered that training is a science. People learn differently, so presentation of training is important. Resources should not be wasted (money, time, skills, personnel, etc.) to accomplish this. My research questioned what negative work events would occur as a result of poor coordination of training and if this would eventually lead to erosion of the work process. The simple answer is yes.

If labs cannot meet certification or produce quality data, training is probably among one of the problems.

I strongly recommend that technical environments adjust their training approaches and processes. We are in a new era where employee turnover may not be solely a function of inadequate training, but volatile employees, due to younger ages. From my survey I felt it obvious that the older age of staff had a big influence on why most of the labs responding had stable staffs. This stability should create a strong potential to have an experienced staff and provide a valuable training resource if used appropriately. I also strongly recommend that technical environments, like the laboratory, find the means to coordinate their training. Most labs responding to my survey were using frontline supervisors to coordinate training. Coordination of training means more than delegating to the most experienced person. A lot of thought should go into formalizing your training well in advance of needing to train staff.

#### **IV. IMPLEMENTATION PLAN**

As promised in the proposal of my project it was my desire to shed some light on the value of properly coordinated training efforts and best approaches to training in technical environments. I will make this simple. Please refer to page 29 of the appendices, (Attachment X). This is a training template that can be used by any lab to improve or enhance training. I have based my template on Ms. Miner's recommendation for training design found on page 138 of her book "The Accidental Trainer". Here she recommends what she refers to as a commonly used approach to design training called "ADDIE". This is an acronym for A- Analysis or Assessment, D- Design, D- Development I-implementation, and E-Evaluation. It should be remembered that training takes an investment of time. Ms. Miner speaks of the difficulty involved with starting a training program and how this task

should not be taken lightly. My efforts here are not to design a training program, but rather a guidance document for the trainer. Since many labs have limited resources or may in some case have resources, but still are not getting the desired training result; I have focused on items that should already be in place.

However, I did not want to forget about vendor training. If labs are using this type of training they should also add some structure to this process. There are shingles out for numerous vendors and customized trainers for technical topics. They are everywhere on the internet. If you are going to use this type of training, "beware". Be sure you know what you need before you pay for training. If you don't have a road map for your training needs, you will end up somewhere, but it probably won't get you to the training expectancies you desired. This applies to vendors regarding purchases of instrumentation. I would strongly recommend you set firm training objectives for the training associated with your instrument purchase. You need to establish these with the salesperson and the company before you commit to purchase. A good vendor will want you to be able to use your instrumentation after installation to become familiar with it doing your work. You may need further training that you have to also pay for, but your employee will be better prepared to take full advantage of this training if they have had the opportunity to work with the instrumentation for a period of time before attending further training.

#### **V. EVALUATION OF METHOD**

The last part of the entire process is evaluation. If you do not get feedback you have no way of knowing if your training goals were met. I recommend, for new employees, setting standards in their annual employee performance document. I often review with new chemist some of the basic general chemistry and chromatography theory, but establish in the objectives of the presentation of

the material that testing will be done to evaluate understanding of the material. I have never had any chemist tell me if this was helpful to them in performing their job, but I am assured after they successfully complete the testing they have the basic knowledge to begin their jobs. Additionally, it begins the documentation of the new employee training. It should be remembered that this will only happen if you write this into the annual employee performance document. Training does need to be documented. Ms. Flemming made a point during her interview of sharing training information by asking employees to share their information after attending external training. This will increase the return on your investment and allow you to evaluate if this training will be good for future use.

Improving training in a lab can be a major undertaking. My project has confirmed just how true this really is. It is so easy for managers to underestimate the importance of planning for training whether it be OJT, formal, or external. Yet, the consequences of not doing so will erode your work process. There will be protocol deviation, low productivity, and eventually turnover. In order to avoid this we must not be above investing the time needed to prepare and implement viable training mechanisms for our organizations no matter how specialized or unique our needs are. If money is an issue, take a page from the U.S. Marine Corps, "adapt and over come". There are so many useful training resources that don't require money or very little. Encourage your staff to use the internet to search for sites relevant to your work. If you are doing EPA work, your staff should be familiar with their website. Almost 100% of the labs I surveyed had staff with BS degrees in biology or chemistry disciplines. Encourage them to bring their old chemistry and instrumentation books, and other course related books for reference. If you can afford subscriptions just for the organization and not for individual staff, do so to cut cost. There are free subscriptions also such as LC/GC. Read them yourself and suggest pertinent articles. Make sure they read SOPS and methods. Have

them sign to document completion. If you have IT staff, work with them to put together Powerpoint presentations that can be used to present information. Always give the new employee notepads to take notes while being trained and a binder for handouts. However, discourage handwritten supplements to SOPs. This may create deviations. Instead assess suggestions as they relate to certified methods and GLP, then modify SOPs if necessary. My motto to staff is “keep it simple”, so always provide new staff with handouts for reference. They can’t commit every thing to memory. I would also recommend if you have service contracts to support instrumentation, service calls be used as training opportunities. Allow staff to shadow the service engineer and engage in dialogue with them regarding repairs being made. This will develop their knowledge base as it relates to troubleshooting and help them to talk with technical and service support staff regarding instrument problems. Your goal should be to create a technical environment and people will function likewise. Most of this only cost time and effort.

My training template is only a start. It in no way has all the answers to training needs for every situation. Training is a vast field. So I recommend if you want to overhaul your approach to training, get help from experienced trainers. There are entire degree programs for this area. These individuals have expertise to help you design training to meet your needs. They may not have the the background in chemistry, biology, or your area of need, but together you can do wonders for your organization in the area of training. I was truly amazed at the general comments from my survey of labs working to design their own training. Some are using video technology to tape experienced staff performing task. This all points to the need for training in technical environments. It is not so readily available as stated by Ms. Flemming and Ms. Smith during my interview of them. So guess what? We have to do it ourselves!!

## **APPENDICES**

Attachment I.

PROJECT PROPOSAL  
CERTIFIED PUBLIC MANAGER PROGRAM

NAME Micheal Mattocks CLASS 2007 DATE 6/22/06

ORGANIZATION DHEC

PROPOSED TITLE OF YOUR PROJECT An Investigation of Poor Training Coordination  
In A Technical Environment

What is the problem you wish to investigate? I wish to investigate the differences between On the Job Training (OJT) in a technical environment both positively and negatively versus structured training in conjunction with OJT. Does the latter provide the best training option? Which of these approaches is more prevalent in the work place? What are effects on the success and the failure of the overall process?

Why is this a problem? This is a problem because of the complex nature of training in a technical environment. The difficulty of identifying training specific to unique needs force the idea of OJT as the most viable option. A more formal and structured training mechanism is usually a secondary option. Poor coordination of training over time does probably affect process efficiency which leads to erosive events such as low productivity, turnover, protocol deviation, and a list of other problems to be identified in my research. I hope my efforts shed light on the result of properly coordinated training efforts and provide some direction as best approaches to training in technical settings.

What sub-problems or roadblocks do you need to address?

1. sources for comparison of training methods
2. means to test theories or process training models
3. training literature specific to tech. environments
4. interview opportunities
5. attitudes regarding training changes
6. time, money, and other resources

14.

What information is necessary to address each sub-problem or roadblock and how will this information be available?

Data Needed	Data Availability (Source)
1. <u>sources for comparison of training</u>	1. <u>contact other laboratories regarding training</u>
2. <u>means to test training models</u>	2. <u>use current laboratory staff</u>
3. <u>training literature specific to tech.</u>	3. <u>state library, internet, other books,</u>
4. <u>interview opportunities</u>	4. <u>phone and interview local sources</u>
5. <u>attitudes regarding change</u>	5. <u>address management to gain support</u>
6. <u>time, money, and other sources</u>	6. <u>utilize what currently is available</u>

PLEASE USE THIS SPACE TO ELABORATE ON ANY OF THE PRECEDING INFORMATION.

The objective of my project is based on the importance of the training mechanism in any process, but also how challenging this can be in a technical environment. Technical environments such as the laboratory, create numerous variables that make it difficult to sometimes pinpoint training needs that are general enough but also specific enough to achieve training that meet the needs of the process. Most often training is purely relegated to OJT mixed with external training on an as needed basis. Questions of what is the best approach or how to establish an appropriate balance for achieving the training objectives of the process are legitimate concerns. Erosive events will occur over time if there is improper coordination of training and training resources. The effects from this improper coordination destroy any chance of having an efficient process and contribute to create unstable work environments. These events can cause management to search for reasons and resolutions to problems that could be hiding behind the improper coordination of training. Thus the thesis of my project questions the coordination of training resources, the balance of OJT and structured training, and hopefully will illustrate affects this may have on work objectives acutely and long range. I hope my research will meticulously discuss training in technical environments while examining OJT and structured training options. However, I would like this project to provide some direction regarding identification, coordination, and initiation of a successful training process while utilizing the best of each training option available.

Please circle the answers the following questions about your project:

1. Does this project represent something you have a reasonable amount of control over in your current position?

A. Yes    B. No    C. Unsure

2. Has your supervisor reviewed and approved this project proposal?

A. Yes    B. No

Submitted by:

Micheal Mattocks

Approved by (OHR):

\_\_\_\_\_

Attachment II.

1. What is the size of your technical staff?
  - A. 1 – 30
  - B. 30 – 60
  - C. 60 – 90
  - D. >90
  
2. Which of the following best describes how your technical staff is trained?
  - A. on the job training (OJT)
  - B. formal training (professional trainer consulted)
  - C. external training (send employee to training/ vendor supplied training)
  - D. mixture of OJT, formal, and external training
  - E. other (explain) \_\_\_\_\_
  
3. Which dollar range best describes the amount of your budget which is committed to training technical staff?
  - A. 500 – 1000
  - B. 1000 – 5000
  - C. 5000 – 10,000
  - D. > 10,000
  
4. Which range of time relevant to months best describes the period of time invested in training before an employee is ready to perform a task independently in your laboratory?
  - A. 1 month – 3 months
  - B. 3 months – 6 months
  - C. 6 months – 12 months
  - D. > 12 months
  
5. Which of the following best describes the science discipline most of your staff have degrees in?
  - A. biology
  - B. biology/with chemistry hours
  - C. chemistry
  - D. other science discipline
  - E. non-science discipline
  
6. Which of the following below best describes the level of education for the majority of your staff?
  - A. BS/BA
  - B. MS
  - C. PHD
  - D. associate degree with experience
  - E. other (explain) \_\_\_\_\_
  
7. What age range below best describes the majority of your staff?
  - A. 21 – 25
  - B. 26 – 35
  - C. 36 – 40
  - D. > 40

8. Which of the following best describes the turn-over of your staff over a given period of time relevant to your staff size?

- A. high
- B. medium
- C. low
- D. stable

9. Who currently coordinates training for your staff specifically related to technical training needs?

- A. section manager/supervisor
- B. laboratory director
- C. other (explain) \_\_\_\_\_

10. In your opinion do you feel that there is a readily available source for specific technical training needs you have?

- A. yes
- B. no

(optional) please explain

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Other comments:

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**Bureau of Environmental Services  
Analytical & Radiological  
Environmental Services Division**

September 8, 2006

Dear Sir or Madame:

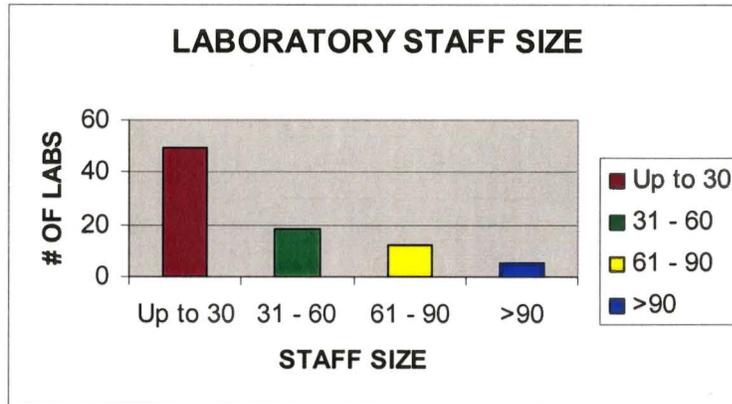
my name is Micheal Mattocks and I am a manager for the S.C. Department of Health and Environmental Control. I am doing a study for a research project for completion of my Certified Public Manager certification regarding the subject of technical training in laboratory settings. Enclosed you will find a short survey. The survey questions are of a general nature and all information will be used only for the purpose of the research intended. Compilation of the data will not refer to your organization in any manner and all responses will be kept confidential. A self addressed and paid postage envelop is enclosed for your convenience in returning the survey. **All responses post marked by Thursday, November 30, 2006 will qualify for a drawing to win a \$25.00 gift card for Wal-Mart compliments of yours truly.**

Thanks in advance for your help with this endeavor and your timely response will be greatly appreciated. If you have questions regarding this survey, please feel free to call me at 803-896-0846 or e-mail me. My e-mail address is [mattocm@dhec.sc.gov](mailto:mattocm@dhec.sc.gov).

Very truly yours,

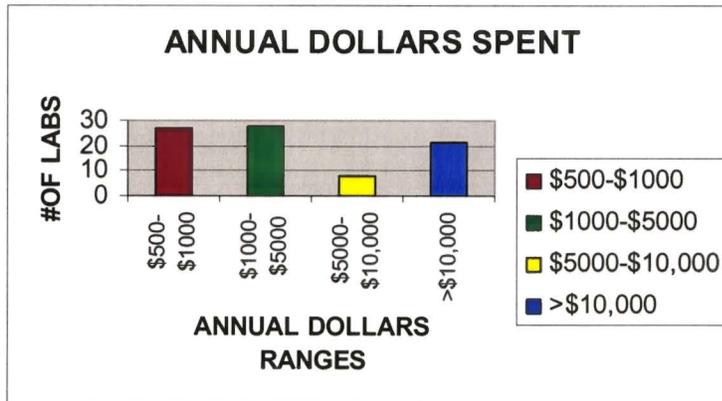
Micheal Mattocks  
Certified Public Manager Candidate  
S.C. Department Health Environmental Control

Attachment III.



GRAPH I.

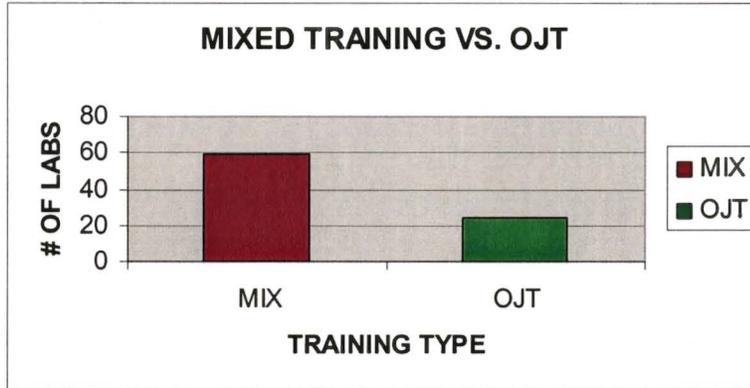
The majority of the labs responding to the survey had staffs of 30 or less.



GRAPH II.

It was important to determine if labs were spending money for training needs. All labs responding to the survey were investing in staff seemingly.

Attachment IV.



GRAPH III.

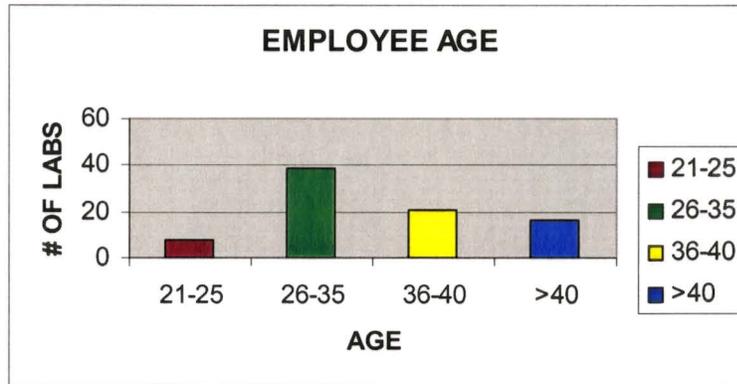
Responses from the survey indicated that 71% of the labs surveyed were using a mixture of training approaches; structured formal training, On The Job Training (OJT), and external training.



GRAPH IV.

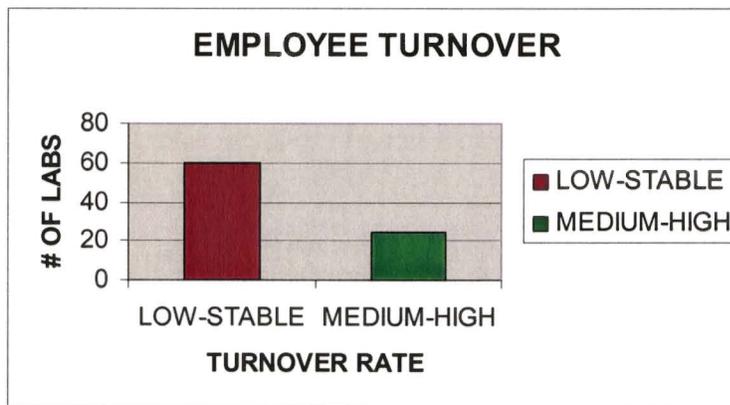
The majority of the labs responding indicated that employees were ready to perform task independently within 1-3 months.

Attachment V.



GRAPH V.

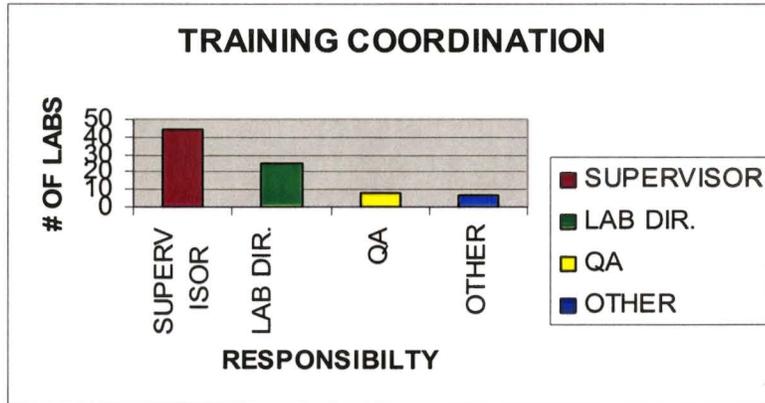
Responses from the survey indicated that 90% of the of the labs surveyed had staff ages of 26 years of age or older.



GRAPH VI.

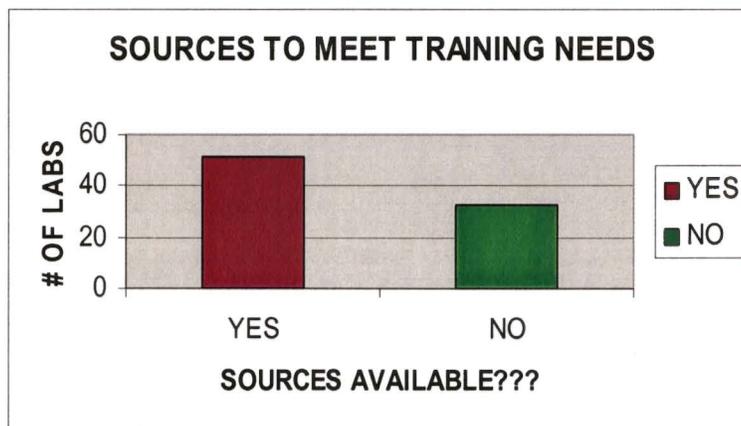
The majority of the labs responding to the survey indicated that they had low to stable staff turnover. Only 27% of the labs responding had medium to high turnover.

Attachment VI.



GRAPH VII.

A little over 50% of the labs responding indicated that supervisors were responsible for coordination of the training needs.



GRAPH VIII.

The majority of labs felt there were adequate resources for meeting training needs.

Attachment VII.

1. What year did you start with the agency?
2. Who trained you for your first job with the agency, manager, co-worker, other?
3. How formal was the training; was it completely On The Job Training (OJT) or was it done externally or a mixture of both?
4. Did you feel the training you received was adequate to prepare you for the job assigned you?
5. How long was it after training was complete before you were able to perform your job independent of supervision?
6. If you have attended external training related to your job during your tenure, has it been beneficial to you in performing that job?
7. How would you train a new employee if you were responsible for their training?
8. Do you think "On The Job Training" is the best means of training new employees in the laboratory?
9. How would you describe the approach to training new employees in your organization; On The Job Training (OJT), formal external training, or a mixture?
10. Do you think your organization has a good approach to training new employees?
11. Are there SOPs in place that serve as adequate reference to learn and perform your job?
12. re the SOPs derived from certified methods?
13. Did your training reflect protocols established in your SOPs and the methods they were derived from?
14. Does a lack of training in any aspect of your job affect the outcome in your work?
15. What type of training would you like to see more of in your place of work?
16. Do you have any further comments you would like to make concerning training as it relates to your job and your organization?

Attachment VIII.

1. How many years have you worked with the agency?
2. How were you trained during your first lab experience in this laboratory?
3. How would you like for your staff to be trained?
4. Who do you feel should be responsible for training in the laboratory?
5. How do you feel about only OJT being used to train staff?
6. What would you consider a more formal or structured approach to training to be in the laboratory?
7. Do you feel we do a mixture of training approaches in the laboratory or is there not a balance in our approach to training?
8. Various studies have indicated that younger employees tend to stay longer if they are trained and have an opportunity to participate in training. How do you feel about this?
9. About 60 % of the labs I surveyed felt there were adequate sources for training. Do you feel there are adequate sources?
10. What would you like to see regarding training your laboratory?
11. Do you feel training is a priority in your laboratory?
12. Do you feel training can and should only be done by the supervisor?
13. What is your opinion of having a training coordinator versus allowing these duties to be handled by supervision?
14. How long do you feel it should take to train an employee and they be able to function minimally semi-independent in the lab?
15. Describe how you feel your new employees should be trained.

16. Do you feel that high turnover, poor performance, protocol deviations, and other negative lab events can be related always to training. Explain

17. How much do you spend annually on external training?

18. Do you get a ROI from the money spent on training?

Attachment IX.

1. What is your opinion on the best approach to training staff in a technical environment?
2. In your opinion what have you seen as the most prevalent approach to train employees in the laboratories you encounter?
3. Who do you feel should be responsible for training staff in a technical setting?
4. Do you feel that in cases of bad or good laboratories that their performance as a lab could have been improved by better training or were there other problems more obvious that were the reason for their poor performance?
5. How do you feel about only "On The Job Training" being used to train new staff?
6. Do you feel a more structured form of training should exist to assure that training is done appropriately? (Please explain)
7. About 70% of the labs I surveyed claimed to use a mixture of "On The Job" and formal structured training. Do you feel this is true and if so what indications make you believe this to be true or not true?
8. Do you feel that a lack of training alone can ultimately affect a labs performance and in your opinion what symptoms would you believe to be seen as a result of this?
9. Various studies of trends in the work place seem to indicate that younger employees seem more likely to stay longer if training is adequate or if training opportunities that enhance their career are available. What is your opinion on this?
10. About 60% of the laboratories I surveyed felt that there was adequate sources for external training. Do you feel this to be true and what sources would you recommend?
11. In your evaluation of labs what do you like to see regarding the training aspect of their process?
12. In your opinion do you feel that training is a priority for labs or is it just assumed to be occurring? (Explain)
13. Do any of the labs you encounter have designated training coordinators?
14. What is your opinion of having a training coordinator versus allowing these duties to be handled by supervision?

15. Do you believe that training is a “just do it” function in the work place or does it have to be planned and coordinated? (Please explain)
16. How independently is staff functioning in labs you evaluate? Does it seem they are functioning at a level with minimal supervision? (Explain if possible)
17. Describe how you feel new employees in a laboratory setting should be trained.
18. In your own area of responsibility, how much formal and how much “On The Job Training” do you use?
19. Of the 14 state labs that responded to my survey, about 50% indicated medium to high turnover relevant to staff size. To the contrary, most private labs indicated low turnover. Does this seem to be the case based upon your experience with both types of laboratories? (Explain)
20. Would you take this opportunity to express your overall opinion of training as it relates to technical environments?

Attachment X.

**Technical Training Template**

**A- Analysis/Assessment:** assess your process to determine if you need training

1. Ask yourself questions about your process and where you feel there are problems.
2. Ask your staff questions to determine needs.
3. Observe your process.
4. Discuss your process with others who may be doing the same type of work or peers.
5. Determine your resources and consider your options.
6. Analyze the information you have collected

**D- Design:** decide the best approach to deliver your training

1. Determine who you will be training and how many.
2. Establish if you will use OJT or external formal training.
3. If OJT is used determine who will do the training and prepare for the training.
4. If external training will be used, determine to assure this is the type of training needed.
5. If training is vendor related as a result of an instrument purchase, establish objectives and ground rules to assure you get the training you need and paid for.
6. Remember that if OJT is used, to formalize it by thinking through how to present the training, provide outlines with objectives, guidance documents(SOPS and methods), and make sure to establish ground rules concerning note taking.

**D- Development:** prepare for the delivery of your training

1. Decide where you will do the training; classroom, lab itself, or will it be self paced.
2. Consider what training aids you can use to enhance the training; training tapes, books, reference materials, internet, hands on opportunities, instrumentation.
3. Consider how long the training will take and time restraints you are working with.
4. Allow an opportunity for practice especially for task that are technique related.
5. Don't forget the basics, no matter how simple the task, don't assume they know, there is no shame in a good review.

**I-Implementation:** lights, camera, action, it's show time!! prepare to present your training

1. Like any good magician, its not the trick as much as the presentation, so practice your presentation.
2. make sure all space, instruments, apparatus, etc. are available and working.

**E- Evaluation:** document your process, get feedback, and make adjustments to improve it

1. Test, have trainee to demonstrate capability, make training a part of annual performance document, have employee to sign after completing training.

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