



PERCEPTION, SAFETY PRACTICES AND FACTORS AFFECTING USE OF PROTECTIVE GEARS BY STUDENTS IN SELECTED TECHNICAL INSTITUTIONS IN CENTRAL KENYA

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ABSTRACT

Training in technical institutions has a large component of the learning processes taking place in workshops and laboratories with a high likelihood of encountering injuries. This study investigated perception on use of protective gears and safety practices by students in workshops and laboratories in Technical Institutions in Central Kenya. Perceptions, safety practices and factors affecting use of protective gears by students in selected Technical institutions safety were investigated. Stratified sampling was used to select three Technical Institutions in the study namely, Nyeri Technical, Mathenge Institute, and Riwika Technical. Qualitative data was collected using questionnaires to a sample of 119 respondents in the participating departments. In all the three institutions sampled in the study, there was compliance with use of safety gears namely, helmets, face masks, hand gloves, knee caps and gum boots. 79% of the respondents agreed that use of protective gears was important, 55% indicated that there were inadequate protective gears in their institutions. 56% confirmed using protective gear and 97.5% felt that there was need for training on use of protective gears. Respondents had a positive attitude towards the use of protective gears with 82.4% indicating that they were comfortable with the use of protective gears. 70% indicated that use of protective gears was affected by availability, knowledge and institutional policy on use of protective gears. Availability of signage indicating need for use of protective gears was identified as a safety measure. The study concluded that Students in Technical Institutions in Central Kenya understand the need for using protective gears. There is need for training institutions to avail protective gears to train students on safe use of protective gears and to put in place safety policies to ensure adherence to safety practices in workshops and laboratories.

Keywords: Use of protective gears, Factors affecting use of protective gears and Safety practices.

1. INTRODUCTION

Protective gears minimize the exposure to injurious physical, chemical or biological agents (Accumen, 2011)¹. The workshops and laboratories contain environmental, chemical, biological and physical hazards which with proper control can be eliminated (University of St. Andrews, 2008)²⁰. Hazards cannot completely be eliminated by protective gears but the risk of injury can be reduced (University of St. Andrews, 2008)²⁰. Protective gears are appropriate in all situations where a person is potentially exposed to hazards (GoK, 2011)¹⁰. They cover and protect parts of the body potentially exposed to the identified hazards and provide a comfortable and secure fit

(Simiyu, 2002)¹⁷. Use of protective gears in higher institutions of learning internationally has been captured in the Environmental Health and Safety (EH & S) policies (Taylor, 2005)¹⁸. Students' perception towards the use of protective gears is positive since it acts as a symbol of role and status of the individual in a society (Crane, 2001)⁴. The area of protective gears is less researched in Kenya in Institutions of higher learning and it requires intervention measures (GoK, 2007a). Protective gears are looked at as being unfashionable because of their design and that they are worn away from normal environment (Arnold, 2001)². Students who required use of protective gears such as overalls, gloves, face masks boots and knee caps associate them with manual jobs, which they consider to be of low societal status (Barnard, 2002³, Frings, 2004⁵). The fact that protective gears are used as a means of communication, it affects the perception students have towards use of protective gears thus hindering safety practices when they are performing tasks in workshops and laboratories Juergens, J. (2004)¹¹. (Loschek (2009)¹³, noted that the language of protective gears is influenced by one's culture and Protective gears are expected to give important information about the wearers' occupation, origin, personality, opinions, tastes and current moods (Schorman, 2003)¹⁶. Misinformation can also be communicated since gears are used in creation of illusion (Migunde, 1993¹⁴; Crane, 2001)⁴. Some of the Protective gears used in different workshops and laboratories are as shown in Table1.

Table 1: Protective gears used in different workshops and laboratories

Departments	Types of protective
Electrical engineering workshop	Eye goggles, face mask, face shield, leather gloves, hard foot wear, leggings, helmet, navy blue dustcoat, knee caps, ear muffs and nose muffs.
Applied science laboratories	Nose muffs, gumboots, white dust coat, latex or rubber gloves, face mask, gas mask with respirator.
Technology workshop	Aprons, gloves, face and nose muffs, closed shoes. Dust coats

Types of Protective gears

Table 1.1 shows different types of protective gears that are designed to protect particular parts of the body which are exposed to occupational hazards. A protective helmet for head protection against impact blows must withstand penetration and absorb the shock of a blow. In some cases, helmets should protect against electric shock (Juergens, 2004)¹¹. The head needs to be protected from injuries as it is classified together with the chest as being the areas that are vital to life (Simiyu, 2002)¹⁷.

For protection against falling or rolling objects, sharp objects, molten metal, hot surfaces and wet, slippery surfaces, workers should use appropriate foot guards, safety shoes or boots and leggings (GoK,2008)⁹ Trevor, (2008)¹⁹ confirmed that safety shoes should be sturdy and have an impact-resistant toe.

Face injuries are caused by metal objects, most often blunt and weighing one pound or more. Accidents result in cuts, lacerations, or punctures and fractures (including broken or lost teeth). Protection should be based on the kind and degree the hazard presents (Taylor, 2005)¹⁸.

Therefore, face masks, respirators and goggles need to be worn any time a person is working in the workshop (Loschek, 2009)¹³.

Exposure to high noise levels can cause irreversible hearing loss or impairment. It also create physical and psychological stress (Trevor, 2008)¹⁹. Preformed or moulded ear muffs should be individually fitted by a professional. Disposable earplugs should be used once and thrown away; non-disposable ones should be cleaned after every use for proper maintenance (Juergens, 2004)¹¹.

Burns, cuts, electrical shocks, amputation and absorption of chemicals are examples of hazards associated with arm and hand injuries. A wide assortment of gloves, hand pads, sleeves and wristlets for protection from these hazards are available for use in the workshops. The devices should be selected to fit the specific task. Rubber and latex material is considered the best for insulating gloves and sleeves (Trevor, 2008)¹⁹.

Many hazards can threaten the torso, for example heat, splashes from hot metals and liquids, impacts, cuts, acids, and radiation (GoK, 2007b)⁸. Fire retardant wool and treated cotton items are comfortable, and they adapt well to a variety of workplace temperatures (GoK, 2001)⁶. Other types of protective gears include, leather, rubberized fabrics, and disposable suits (Juergens, 2004)¹¹.

Proper protective equipment with respirators are required to control occupational diseases caused by breathing contaminated air with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, and vapours (Krueger & Banderet, 1997)¹².

Problem Statement

Use of protective gears and safety practices are important in all situations where a person is potentially exposed to hazards (Simiyu, 2002)¹⁷. The area of protective gears is less researched in Kenya in Institutions of higher learning and it requires intervention measures (GoK, 2007a). This saw the need to investigate perception on use of protective gears by students in selected technical institutions in central Kenya. In the University of Toronto, EH & S policies, supervisors and other individuals are charged with the responsibility of ensuring that students and visitors are adequately informed about safety practices whenever they are in the workshops or laboratories (OSHA 3151-12R,2003, Loschek, 2009)¹³. This study sought to investigate whether safety practices are practiced by students in Technical institutions in central Kenya. Practical lessons require use of protective gears by students always (University of St. Andrews, 2008)²⁰. This study sought to establish whether students in Technical Institutions in central Kenya wear protective gears as a safety measure to prevent different hazards occurrence in workshops and laboratories. This brought about the need to investigate the factors that affect use of protective gears by students in the selected Technical Institutions in central Kenya. This study focused on perception, safety practices in workshops and laboratories and factors affecting use of protective gears in Technical institutions in central Kenya.

OBJECTIVES

- i. The study investigated perception on use of protective gears by students in technical institutions in Central Kenya.
- ii. The study sought to establish the safety practices by students in workshops and laboratories in technical institutions in Central Kenya.

- iii. The study investigated factors affecting use of protective gears by students in technical institutions in Central Kenya.

2. METHODOLOGY

The study area was purposively selected since it had more technical institutions than any other area in Kenya GoK (2011)¹⁰. The location of the study area was more accessible to students from different parts of the country. The area was easily accessible the researcher. Descriptive survey design was used in the study. The method was preferred because information would be readily obtainable from respondents in the workshops and laboratories, concerning their perception, safety practices and factors affecting use of protective gears.

The target population comprised students of technical institutions in Central Kenya, who belonged to: technology, electrical engineering, and applied sciences departments. These departments were chosen because their courses are practical oriented than theoretical. The nature of work in the mentioned departments also pose the highest percentage of accidents, since the students are directly in contact with live wires, solid and liquid chemicals, contagious gases, harmful dust-like cloth dust, loud noise and harmful temperature extremes.

Stratified sampling technic was used to select the technical training institutes (TTIs). These were Nyeri Technical, Mathenge and Riwika Technical Institute. The study targeted all the second-year students undertaking a three-year diploma course in clothing Technology, Electrical Engineering and Applied Science Departments. This group of respondents was targeted because they had been in the institutions for a considerable length of time and this meant they had more information than the first-years who had just joined the institutions. The third-year students had more information but they were limited by the fact that they were busy with their projects and preparation for their final exam which hindered them from participating in the study.

All the second-year diploma students in the three institutions and belonging to the three departments were requested to participate in the study, by filling in a questionnaire. Qualitative data was collected from a sample of one hundred and nineteen (119) respondents. The collected data was analyzed using descriptive statistical method with the aid of the Statistical Package for Social Sciences (SPSS), version 17.0. The analyzed data was summarized by use of percentages and presented using tables, bar graphs and pie charts.

3. RESULTS AND DISCUSSION

The table 2 below indicates the number of the respondents who participated in the study

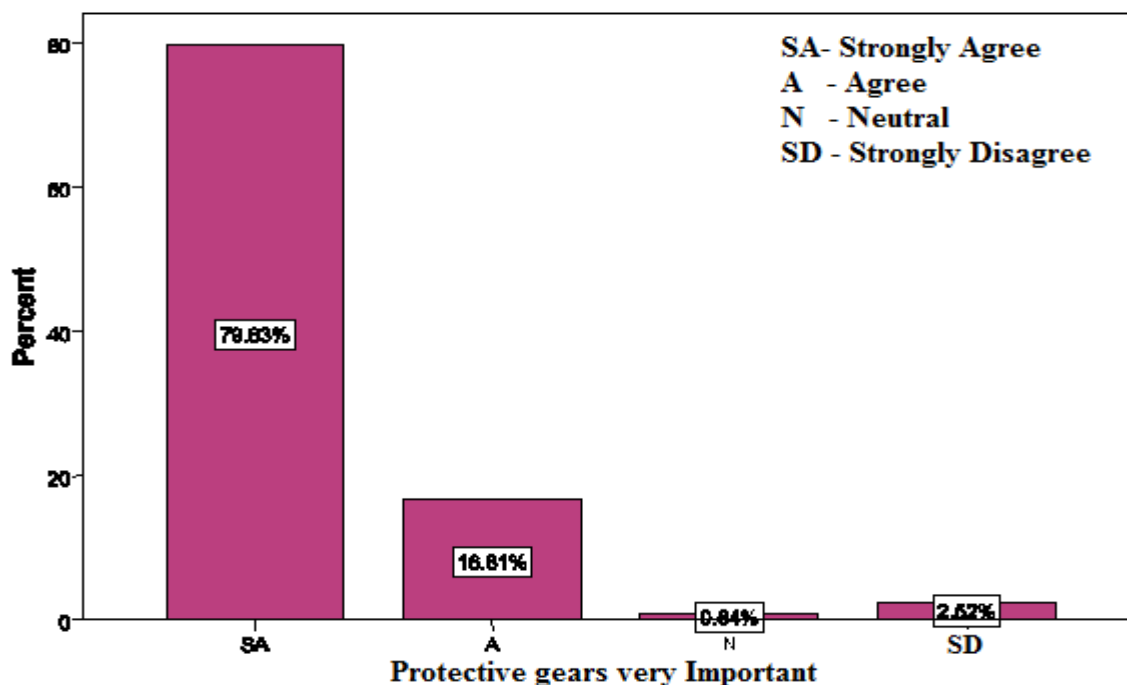
Table 2: Respondents' department

Department	Frequency	Percentage
Clothing Technology	20	16.8%
Applied Science	42	35.3%
Electrical Engineering	57	47.9%
Total	119	100%

In Clothing Technology departments there were 20 respondents. This was 16.8% of the total number of respondents. In Applied Science departments there were 42 respondents which were 35.3% of the total. In Electrical department there were 57 respondents which was 47.9% of the total number of the respondents’.

Perception on Use of Protective gears was investigated and according to Barnard (2002)³ perceptions is predispositions to behave in a certain way with respect to specific items like protective gears. An individual may have different perception towards a particular style, brand name or social appropriateness of (Migunde, 1993)¹⁴. The students of Technical Institutions in Central Kenya indicated that use of protective gears was important as shown below.

The respondents’ response to the statement that a protective gear was important is summarized in figure 1.



It is important to use protective gears in areas that pose environmental, chemical, biological and physical hazards as a safety control measure (Trevor, 2008)¹⁹. Figure1 indicates that, 96.6% (16.8 % agreed and 79.8 % strongly agreed) of the respondents concurred with the statement that protective gears are important. This is an indication that there is a positive perception towards the use of protective gears. This confirms what (University of St. Andrews, 2008)²⁰ noted that full protective gears should be worn so as to achieve the required standard of protection.

Adequacy of Protective Gears

The respondents were asked about the adequacy of use of protective gears in their respective institutions, and the results are shown in figure 2.

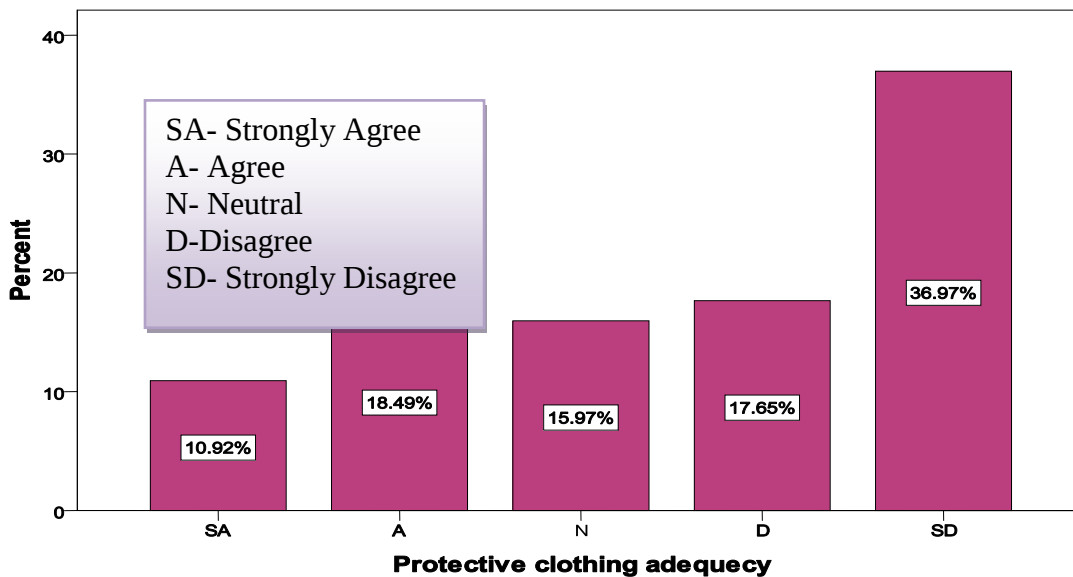


Figure 4.6: Adequacy of Protective Gears

55% indicated that there were inadequate protective gears in their institutions Figure 2: 55% (17.6% and 37.5%) indicated that there were inadequate protective gears in their institutions. The inadequacy of protective gears in Technical Institutions in Central Kenya was found to be a hindrance factor on the use of protective gears. The inadequacy was anticipated to be caused by the respondents since they do not purchase the required protective gears like face masks, ear muffs, gloves, knee caps and helmets necessary during practical lessons in the workshops and laboratories. However, Trevor (2008) notes that it is the users sole responsibility to evaluate the environmental factors and the protective equipment required so that he/she can select the appropriate combinations.

If the students in Technical Institutions are told “No protective gears, No practical”, they would put a lot of efforts to request for the required protective gears from their sponsors. This would help in getting rid of inadequacy of protective gears in individual Technical Institution in Central Kenya. In addition, students need to be reminded about laboratory and workshop rules and regulations by their tutors through displaying them in the work places.

Comfort with protective gears

In response to comfort in wearing protective gears, the results were as shown in table below.

Table 3 Comfort with Protective

	Frequency	Percent
Strongly Agree	56	47.1
Agree	42	35.3
Neutral	4	3.4
Disagree	6	5.0
Strongly Disagree	11	9.2
Total	119	100.0

Table 3 shows that 82.4% (35.3%, 47.1%) agreed that they felt comfortable when wearing protective gears. This is an indication of positive perception and attitude towards the use of protective gears by respondents in technical institutions in Central Kenya.

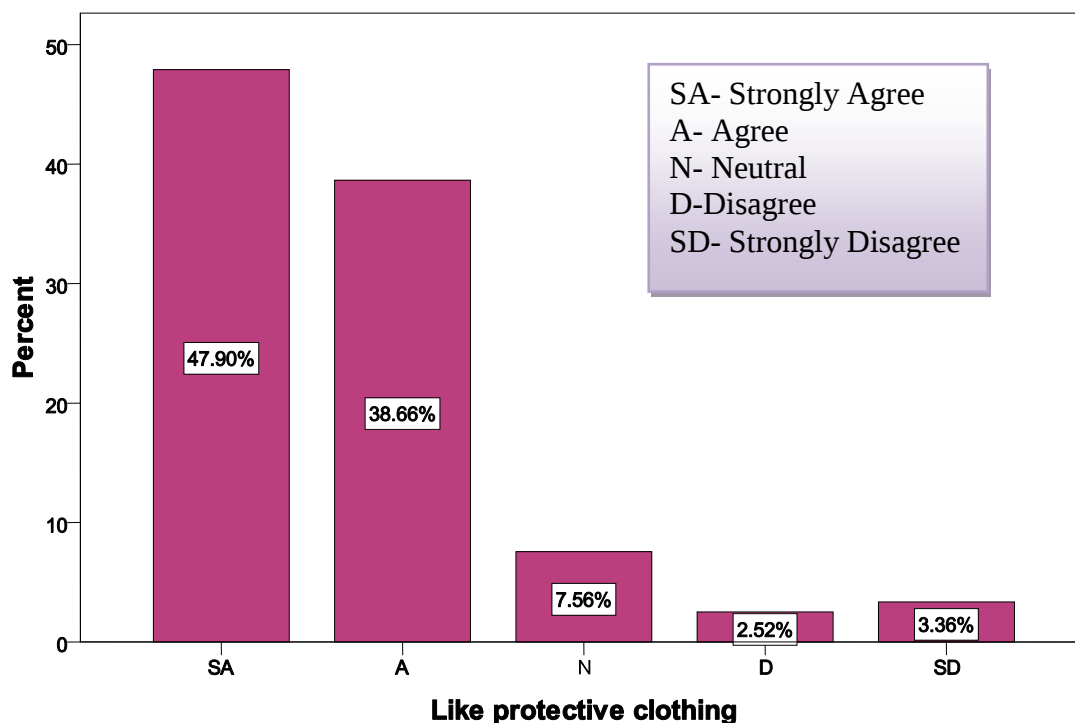
**Figure 2: Respondents liking of protective**

Figure 4.7 indicate that 86.6% (38.7 % agree 47.9 % strongly agree) agreed with the statement “I like wearing protective gears that are required in practical lessons in my field of study”. Therefore, there was an indication that perception of the students in Technical Institutions in Central Kenya towards the use of protective gears was positive and thus does not hinder the

usage of the protective gears in the workshops and laboratories. However, it is the feeling of the researcher that if only the individual institutions could adhere to Health and Safety Act 2007 guidelines, they would promote students culture of using protective gears in the workshops and laboratories.

Safety Practices

Use of Protective gear is an important safety control measure as it protects individuals from identified hazards and gives them confidence when carrying out a practical lesson (Simiyu, 2002)¹⁷. If adhered to, it could enhance efficiency in workshops and laboratories.

Signage to indicate where protective gears were required was seen as an indicator of lack of information by students. University of St. Andrews, (2008)²⁰ pointed out that lack of signage was a major hindrance to safe housekeeping standards within the workshops and laboratories. Inappropriateness and lack of training of protective gears on the use prevents good safety practices. Trevor (2008)¹⁹ notes that it's important to assess the likely chemical, biological, physical and environmental hazards associated with the task at hand. This could help enhancement of safety control measure in the workshops and laboratories.

Training on use of Protective gears

Trained on protective gears is importance so as to promote safety (University of St. Andrews, 2008)²⁰. This has been emphasized by the Occupation Health and Safety (OHS) guidelines for Technical Institutions (GoK, 2007b)⁸. According to the guidelines, Health and Safety Training Induction Programme needs to be established, where documented Health and Safety policies/procedures and other documents are communicated to students at all levels (GoK, 2007b)⁸. In response to training on protective gears, students indicated as shown in the table below

Table 4 Need for training

	Frequency	Percent
Strongly agree	87	73.1
Agree	29	24.4
Strongly Disagree	3	2.5
Total	119	100.0

Table 4 indicates that 73.1 % strongly agreed while 24.4 % agreed that there was need for training on the use of protective gears. This indicated that the respondents in Technical Institutions in Central Kenya do not have adequate knowledge on protective gears. University of St. Andrews (2008)²⁰ note that students need to be trained on the nature of hazards, importance of wearing protective gears, what to wear as well as good personal hygiene practice in work place. This needs to be practiced by students in Technical Institutions in Central Kenya to ensure adherence to safety practices in workshops and laboratories.

Factors affecting Use of Protective Gears

The following factors were noted to affect use of protective gears by students in technical institutions workshops and laboratories. 20% of the respondents indicated that protective gears

were not available in their institutions 20% indicated that they were not informed on the individual protective gears required for different tasks in the workshops and laboratories. 30% of the respondents confirmed that there were no policies on use of protective gears in their institutions as shown in Table 5.

Table 5

Factors affecting use of protective gears	Frequency	Percentage (%)
Availability	23.8	20
Knowledge	23.8	20
Lack of policies	35.7	30
Total	83.3	70

If Technical Institutions in Central Kenya would address the above limitations, students would make use of protective gears with ease.

4. CONCLUSIONS AND RECOMMENDATIONS

Students in Technical Institutions in Central Kenya understand the need for using protective gears. Therefore, there is need for training institutions to avail protective gears to students, to train students on safe use of protective gears and to put in place safety policies to ensure adherence to safety practices in workshops and laboratories

However, safety in the workshops and laboratories is enhanced by proper use of protective gears which ensures safe working condition as it promotes confidence in task performance.

5. REFERENCES

1. Accumen, B. L. (2011). Industrial protective: Global market perspective market research report.
2. Arnold (2001). Fashion, desire and anxiety: Image and morality in the 20th century. I.B.Tauris.
3. Barnard, M. (2002). Fashion as communication. London: Routledge.
4. Crane, D. (2001). Fashion and its social agendas: class, gender, and identity in. a. University of Chicago Press.
5. Frings, G. S. (2004). Fashion: From concept to consumer, 6th edition. New York: Prentice Hall.
6. GoK. (2001). Position paper on textile industry. Nairobi: Government Printer.
7. GoK (2007a). The Kenya Gazette Supplement. Nairobi: Government Printer.
8. GoK (2007b). Occupation health and safety guidelines for TIVET Institutions. Nairobi: Government Printer.
9. GoK (2008). Health and safety Survey in TIVET Institutions. Nairobi: Government Printer.
10. GoK (2011). TIVET ICT Baseline survey draft report. Nairobi: Government Printer.
11. Juergens, J. (2004). "Safety First." Occupational Health & Safety 73, no. 694– 96
12. Krueger, G. P., & Banderet, L.E. (1997). Effects of chemical protective on Military performance: A review of the issues. Military Psychology, 9(4), 255-286.
13. Loschek, I. (2009). When clothes become fashion: Design and innovation systems.

- London: Berg.
14. Migunde, S.O. (1993) Socio-cultural and psychological factors affecting selection for adolescents, unpublished thesis, Kenyatta University.
 15. OSHA 3151-12R (2003) Personal Protective Equipment. U.S. Department of Labor.
 16. Schorman, R. (2003). Selling style: and social change at the turn of the century. New York: University of Pennsylvania Press.
 17. Simiyu, J. W. (2002). Workshop and laboratory planning and organization and managing. Eldoret: Salanic Printers.
 18. Taylor, B., Jr.(2005). Effective Environmental Health and Safety Management Using The Team Approach. Hoboken, NJ: Wiley & Sons.
 19. Trevor, L. (2008). Advanced Electrical Installation Work. 5th edition. New York: Elsevier Ltd.
 20. The Regents of the University of California Policy and Procedure Manual. Retrieved 2006- 2010 from <http://manuals.ucdavis.edu/PPM/290/290-50.htm>
 21. University of St. Andrews (2008).The Selection, Use and Maintenance of Personal Protective Equipment (PPE). London: Berg.