

---

# **LEAD-BASED PAINT ABATEMENT TRAINING DISCUSSION PAPER**

## **Final Report**

---

Submitted to

CMHC  
Project Implementation Division

---

By

Appin Associates  
Training Unlimited

---

May 1993

---

**NOTE: LE RÉSUMÉ EN FRANÇAIS SUIT IMMÉDIATEMENT LE RÉSUMÉ EN ANGLAIS.**

*Canada Mortgage and Housing Corporation (CMHC), the Federal Government's housing agency, is responsible for administering the National Housing Act.*

*This legislation is designed to aid in the improvement of housing and living conditions in Canada. As a result, CMHC has interests in all aspects of housing and urban growth and development.*

*Under Part IX of this Act, the Government of Canada provides funds to CMHC to conduct research into the social, economic and technical aspects of housing and related fields, and to undertake the publishing and distribution of the results of this research. CMHC therefore has a statutory responsibility to make widely available, information which may be useful in the improvement of housing and living conditions.*

*This publication is one of the many items of information published by CMHC with the assistance of federal funds. The views expressed are those of the author(s) and do not necessarily represent the official views of Canada Mortgage and Housing Corporation.*

## RÉSUMÉ

---

La Division de l'innovation dans l'habitation de la SCHL a engagé la firme Appin Associates Training Unlimited pour évaluer les programmes de formation existants en matière d'enlèvement de la peinture à base de plomb (EPBP) et pour élaborer une stratégie de mise en oeuvre pour un tel programme au Canada.

Par «enlèvement», on entend toute méthode permettant d'éliminer ou de réduire l'exposition des occupants à la peinture à base de plomb (PBP). Ces méthodes incluent l'enlèvement de la peinture, le remplacement des matériaux (comme les boiseries) contenant de la PBP et le scellement.

Cette étude poursuivait trois objectifs :

1. Repérer et évaluer les outils de formation américains conçus pour le secteur de l'EPBP, puis choisir ceux qui pourraient convenir le mieux à la création d'un programme de formation destiné au secteur canadien de l'EPBP.
2. Préparer un programme d'enseignement pour les entrepreneurs intéressés à devenir spécialistes de l'EPBP ainsi qu'un séminaire d'information offrant aux entrepreneurs de rénovation, aux propriétaires-occupants et autres de l'information générale permettant de savoir quand faire appel aux spécialistes de l'EPBP ainsi que des conseils sur l'atténuation de l'exposition au plomb pendant des travaux de rénovation.
3. Formuler des propositions quant à la mise en oeuvre d'une stratégie pancanadienne visant à présenter les cours de formation et le séminaire d'information proposés.

### Objectif 1 : Passer en revue le matériel de formation existant

L'équipe a établi des critères d'évaluation des cours, puis a passé en revue deux cours auxquels ont assisté deux membres du personnel d'Appin. Le premier est celui donné par Leadtec Services, Inc. (LSI), de Baltimore (Maryland), lequel fait suite aux directives du Housing and Urban Development Department, et le second, d'une durée de 5 jours, est celui de la Aulson Company, Inc. et porte sur l'inspection et l'enlèvement de la PBP, donné à Boston (Massachusetts). L'équipe conclut que les deux cours comportent des faiblesses (p. ex., ils n'enseignent pas les techniques d'enlèvement et ne s'adressent pas à un auditoire précis). Néanmoins, une partie du matériel pourrait être adapté aux besoins du Canada.

### Objectif 2 : Élaborer un programme de formation

L'équipe s'est ensuite fixé des paramètres devant servir à orienter la conception du cours au Canada. Le plus important de ces paramètres est que la connaissance des techniques de réduction des risques de même que les techniques d'enlèvement doivent être intégrées aux cours. Ces techniques comprennent la réduction des risques pour les travailleurs de la

construction, comme les peintres et les menuisiers, effectuant des travaux de rénovation, des techniques dites de «maintien en place», pour les propriétaires-occupants qui, pour le moment, n'ont pas les moyens d'enlever la PBP ainsi que des techniques destinées aux entrepreneurs et autres qui se sont donné comme priorité d'enlever la PBP dans les habitations.

L'équipe a défini quatre catégories de tâches, à savoir la préparation du chantier, l'enlèvement des fenêtres et la menuiserie, la peinture et le nettoyage du chantier, pouvant être réalisées par des spécialistes. L'équipe propose un programme de formation axée sur les compétences pour enseigner les techniques d'EPBP. Cette méthode a cours un peu partout en Amérique du Nord pour l'enseignement aux adultes.

À partir de ces paramètres, l'équipe recommande :

- ° que des cours de formation axée sur les compétences, variant de deux à cinq jours, soient préparés pour les trois types de professionnels du secteur de l'EPBP (c.-à-d. les inspecteurs, les entrepreneurs et les travailleurs);
- ° qu'un manuel destiné aux professeurs soit rédigé pour chacun des cours créés;
- ° qu'un manuel complet destiné aux apprenants, comportant du matériel tiré des cours américains tel que l'indique la section 2, soit rédigé à l'intention de tous les membres du secteur de l'EPBP qui pourraient avoir un rôle à jouer dans ce domaine;
- ° que du matériel d'enseignement, comme des diapositives, des acétates, des vidéos ou des maquettes, soit conçu selon les caractéristiques de chaque cours.

L'équipe a repéré plusieurs questions techniques qui devront être éclaircies pour que les concepteurs des cours soient mis dans la bonne voie.

Même si, selon l'équipe, la clarification de ce genre de question n'est pas une condition préalable à la préparation des cours, il faudra entamer les démarches afin que les cours puissent être mis à jour dès que les données recherchées seront connues. Une conférence réunissant les partenaires intéressés, organisée sous les auspices du sous-comité de la formation en EPBP et présidé par la SCHL, constituerait sans doute la meilleure façon de préparer une série de positions provisoires qui orienteraient le travail de formation. L'équipe recommande que le sous-comité serve de forum pour la résolution des problèmes techniques cernés dans la section 3 du rapport.

Les recherches les plus importantes doivent être entreprises sur la question des méthodes de «maintien en place» visant à réduire les risques. Cet aspect est très important, car même si des fonds importants étaient débloqués pour enlever le plomb dans les maisons au pays, il pourrait s'écouler encore des années avant que le problème soit complètement réglé. Par conséquent, la recherche est essentielle pour expliquer aux propriétaires-occupants comment gérer le problème jusqu'à ce que l'on trouve des fonds (où que ce soit) pour enlever la PBP.

Comme l'équipe est d'avis que les entrepreneurs pourraient souhaiter inclure les mesures de «maintien en place» au sein d'une stratégie d'enlèvement de la PBP, les plans de cours comprendront une section où l'on enseignera aux entrepreneurs comment expliquer ces techniques aux propriétaires-occupants. Nous sommes conscients du fait que les entrepreneurs s'intéresseront surtout aux travaux de rénovation.

Nous estimons que bien des entrepreneurs fourniront de l'information sur le «maintien en place» s'ils disposent de publications sur le sujet, mais ils seront réticents à assumer la responsabilité de leurs conseils s'ils n'ont aucune influence sur la mise en place du programme et s'ils n'en tirent aucun revenu.

L'équipe recommande également la conception de séminaires de 3 ou 4 heures sur la PBP à l'intention des propriétaires-occupants et des personnes intéressées. Ce séminaire ne montrerait pas aux gens comment effectuer eux-mêmes les travaux, mais il leur permettrait d'en arriver à l'une des trois conclusions suivantes :

1. Leur maison ne pose aucun risque.
2. Les mesures de «maintien en place» sont praticables et réduiront le risque d'exposition à la poussière plombifère.
3. Ils doivent faire appel à un spécialiste dans le domaine pour enlever la PBP.

### Objectif 3 : Concevoir une stratégie de mise en oeuvre

L'information dont on dispose jusqu'à présent révèle que la PBP n'est pas devenue un problème important, même après la distribution partielle des dépliants. Après avoir analysé la manière dont le problème des substances dangereuses comme l'amiante, la MIUF et le radon a été traité, l'équipe estime que la réaction pourrait être atténuée en l'absence de règlements ou de fonds destinés à corriger le problème.

Nous sommes d'avis qu'en l'absence de réglementation, c'est l'histoire de l'amiante qui se répétera. En effet, les techniques de «maintien en place» seront préconisées jusqu'à ce que le danger soit trop grand ou que des travaux de rénovation soient envisagés. On verra des entrepreneurs offrir des services d'EPBP, mais bien d'autres feront appel à des spécialistes de la question comme ils le feraient pour l'enlèvement de l'amiante. La personne ou l'entreprise pourra se voir accorder un contrat de sous-traitance afin d'enlever la PBP pour que les autres ouvriers participant aux travaux de rénovation (comme les peintres, les menuisiers et les électriciens) puissent travailler sans s'exposer à la PBP.

Nous croyons que les activités de gestion axée sur l'offre des services publics provinciaux pourraient remuer la PBP dans certains cas (l'isolation des murs extérieurs par exemple) et que ces interventions pourraient accroître la demande de formation en EPBP au Canada.

Nous recommandons la tenue d'une enquête auprès des consommateurs une fois la distribution du dépliant terminée afin de déterminer si le grand public est préoccupé par cette question.

En dépit des réactions du public à ce jour, la PBP représente un danger réel. C'est surtout grâce à une seule émission de télévision que cette question a été soulevée et il s'avère que de nombreuses propriétés publiques devraient être décontaminées. L'expérience acquise tout récemment par les Américains montre bien la nécessité d'une bonne formation afin d'éviter toute exposition résultant d'un travail bâclé.

Ces facteurs portent à penser que l'on doit réagir de façon mesurée. Une solution possible serait que le gouvernement appuie la mise sur pied d'un programme de formation national confié à des professeurs qualifiés. Le rapport en fait état dans la section portant sur la conception du matériel: Option 3 - Financement de la préparation du matériel de cours.

Étant donné que la création de cours de formation est déjà amorcée au Canada, l'équipe suggère aussi l'Option 2 - Révision des cours déjà offerts, qui implique la révision des cours actuellement donnés sur le marché dans le but d'approuver, en quelque sorte, le matériel utilisé.

L'équipe recommande que la SCHL examine sérieusement l'Option 2 - Partenariat. Elle consiste à :

- ° entreprendre des discussions avec certaines associations professionnelles afin de coordonner la présentation des cours à leurs membres;
- ° amorcer des discussions avec les collèges en vue d'intégrer l'EPBP aux programmes existants de formation dans les métiers et de présenter la formation dans le cadre des programmes d'éducation permanente.

L'équipe recommande que le séminaire destiné aux consommateurs soit présenté aux divers membres de l'industrie du logement, notamment les constructeurs, les rénovateurs, les fournisseurs, les gens de métier, les architectes, les entrepreneurs d'électricité et de plomberie ainsi que les personnes oeuvrant au sein de secteurs connexes comme l'immobilier et la vente au détail. Le grand public (surtout les personnes qui comptent entreprendre des travaux de rénovation) sera également visé. L'équipe a aussi suggéré diverses occasions où le séminaire pourrait être présenté.



**Helping to  
house Canadians**

**Question habitation,  
comptez sur nous**

National Office

Bureau National

700 Montreal Road  
Ottawa, Ontario  
K1A 0P7

700 chemin Montréal  
Ottawa (Ontario)  
K1A 0P7

*Puisqu'on prévoit une demande restreinte pour ce document de recherche, seul le sommaire a été traduit.*

*La SCHL fera traduire le document si la demande le justifie.*

*Pour nous aider à déterminer si la demande justifie que ce rapport soit traduit en français, veuillez remplir la partie ci-dessous et la retourner à l'adresse suivante :*

*Le Centre canadien de documentation sur l'habitation  
La Société canadienne d'hypothèques et de logement  
700, chemin de Montréal, bureau C1-200  
Ottawa (Ontario)  
K1A 0P7*

**TITRE DU RAPPORT :** \_\_\_\_\_  
\_\_\_\_\_

*Je préférerais que ce rapport soit disponible en français.*

**NOM** \_\_\_\_\_

**ADRESSE** \_\_\_\_\_

rue

app.

ville

province

code postal

**No de téléphone** ( ) \_\_\_\_\_



TEL: (613) 748-2000

Canada Mortgage and Housing Corporation

Société canadienne d'hypothèques et de logement

Canada

# EXECUTIVE SUMMARY

---

Appin Associates and Training Unlimited were engaged by CMHC Housing Innovation Division (HID) to complete a curriculum review and develop a Lead-Based Paint Abatement (LBPA) training implementation strategy for Canada.

Abatement is a generic term in common usage in the US to refer to any method used to eliminate or to reduce occupant exposure to Lead-based Paint (LBP). Such methods include removal of paint, replacement of material (e.g., wood trim) containing LBP and encapsulation.

The project had three objectives:

1. To identify and review existing training materials developed for the LBP abatement industry in the USA and to select those that could best meet the needs of a Lead-Based Paint (LBP) abatement industry training program in Canada.
2. To prepare a training curriculum for Canadian contractors interested in becoming LBP abatement specialists and an information seminar that will provide renovation contractors, homeowners and others with general information in order to recognize when LBP abatement specialists are required, as well as advice on reducing lead exposure during renovation work.
3. To design options for a Canada-wide training implementation strategy for the proposed training courses and the information seminar.

## Objective 1: Review Existing LBP Course Materials

The Team designed a set of course evaluation criteria and then reviewed two courses attended by Appin staff. One was the Leadtec Services, Inc. (LSI), Baltimore, MD HUD Guidelines course and the other was the Aulson Company, Inc., 5 day Inspecting and Abating LBP course in Boston, MA. The Team concluded that both courses had weaknesses (i.e., they did not teach abatement skills and were not targeted to specific audiences), but some of the material could be adapted for use in Canada.

## Objective 2: Design a Training Curriculum

The Team then outlined a series of assumptions that will help guide the course design for Canada. The most important of which is that knowledge of risk reduction techniques as well as abatement techniques need to be built into the courses. These techniques include risk reduction for construction workers, such as painters and carpenters doing renovation work, techniques (called "*in-place management*" techniques) for homeowners who cannot presently afford to abate LBP and techniques for contractors and others who wish to abate LBP on a priority basis in the home.

The Team defined four job categories, namely; 1. Site Preparation, 2. Window Removal and Carpentry work, 3. Painting and 4. Site Cleanup that could be done by specialists. The Team proposes to use a competency-based training model to teach LBPA job skills. Such methods are used throughout North America to teach job skills to adult learners.

Based on these assumptions, the Team recommends that:

- Competency-Based Training courses varying in length from two to five days, be developed for all three roles in the LBPA industry (i.e., inspector, contractor and worker);
- an instructor manual be developed for each of the courses designed;
- a comprehensive student manual that incorporates material from the USA courses as identified in Section 2, be developed for use by all potential players in the LBPA industry;
- teaching materials, including slides, overheads, videos and/or mock-ups be developed as appropriate for each of the courses.

The Team identified several technical issues requiring clarification so that guidance could be given to training course developers.

While the Team recommends that resolution of such issues is not a pre-requisite to commencement of course development, work should begin to resolve these questions so that courses can be updated when information comes available. Perhaps a conference of interested parties under the auspices of the Lead-Based Paint Abatement Training Sub-committee chaired by CMHC is the best way to prepare a set of interim positions that would guide the training work. The Team recommends that the Sub-committee be the forum for resolving technical issues identified in Section 3 of the report.

The most important research effort that needs to be undertaken is on "*in-place management*" methods to reduce risk. It is critical because even with a major infusion of funds to delead houses across Canada, it still could take years before the problem is dealt with comprehensively. One therefore needs research to tell homeowners how to manage the problem until the funds (from whatever source) are found to abate LBP.

Since the Team believes that contractors might be willing to incorporate "*in-place management*" measures as part of an abatement strategy, a function on teaching contractors how to explain these techniques to homeowners has been included in the course outlines. We recognize that contractors will want to focus on renovation work.

We believe that many contractors will provide information on "*in-place management*" if such publications are available but they will be reluctant to take responsibility for such advice because they have no control over the implementation and will earn no revenue from giving the advice.

The Team also recommends that a 3 - 4 hour seminar be developed for homeowners and interested parties to learn about LBP. The seminar will not train people to do the work themselves, but will lead them to one of three conclusions:

1. that their home doesn't pose a risk;
2. that "*in-place management*" measures are workable and will reduce risk of exposure to LBP dust;
3. that they should hire a specialist to abate LBP.

### Objective 3: Design an Implementation Strategy

The information to date is that LBP has not become a major issue even with the partial distribution of the leaflets. The Team's analysis of the handling of hazards such as asbestos, UFFI and radon suggests that the response may be muted without abatement regulations or funds to help correct the problem.

It is our view that in the absence of regulation, the asbestos experience is the model that will be followed. That is, "*in-place management*" will be followed until the hazard is too great or renovation is contemplated. There will be those contractors who will offer LBPA services, but many will turn to a LBPA specialist, as they would for asbestos abatement. The person or company would be awarded a subcontract to abate the lead paint so the other workers involved in the renovation (e.g., painters, carpenters, electricians) can do their jobs without risk of exposure to LBP.

We suggest that the Demand-Side Management (DSM) activities of provincial utilities may disturb LBP in some cases (e.g., insulating exterior walls) and this work may increase demand for LBPA training in Canada.

We recommend that a consumer survey be done after the leaflets are distributed to find out if the general public is concerned about the issue.

Regardless of the public response to date, it is known that LBP is a hazard, its profile was raised largely through one television show and there are many public properties that could require deleading. The latest experience in the USA points to proper training to avoid exposure because of incorrect work.

These factors suggest that a measured response to the issue and one response by government is to sponsor the development of a training package that could be offered nationally by qualified instructors. This is referred to as material development Option 3 - Fund Preparation of Course Materials in the report.

Given that there is already course development happening in Canada, the Team also suggests Option 2- Review Courses Now Being Offered, which involves reviewing courses currently being offered in the marketplace with the intent of giving some sort of approval to the material, also be pursued.

The Team recommends that CMHC look seriously at delivery Option 2 - the Partnership Option. This involves:

- discussions with selected industry associations to co-ordinate course delivery to their members,
- discussions with community colleges for integration of LBPA with existing trades training and delivery of the training courses through continuing education programs.

The Team recommends that the consumer seminar be delivered to the various players in the housing industry, including builders, renovators, suppliers, tradespeople, architects, electrical and plumbing contractors, as well as individuals employed in related industries, such as real estate and retail sales. The general public (especially those who are contemplating renovation) will also be targeted. The Team has suggested a wide variety of venues to hold the seminar.

# TABLE OF CONTENTS

---

EXECUTIVE SUMMARY .....	Page (i)
<b>1. INTRODUCTION .....</b>	<b>Page 1</b>
<b>2. REVIEW OF SELECTED COURSES .....</b>	<b>Page 2</b>
2.1 Selection of Courses to Review .....	Page 2
2.2 Course Evaluation Criteria .....	Page 2
2.3 Evaluation of Leadtec Services, Inc. Two Day HUD Guidelines Course ..	Page 2
2.3.1 Course Objectives .....	Page 2
2.3.2 Learner Evaluation Procedure .....	Page 3
2.3.3 Course Presentation Format .....	Page 4
2.3.4 Course Materials .....	Page 5
2.3.5 Course Content .....	Page 5
2.3.6 Suitability for Use in Canada .....	Page 6
2.4 Evaluation of The Aulson Company, Inc.	
Five Day Contractor/Inspector Course .....	Page 6
2.4.1 Course Objectives .....	Page 6
2.4.2 Learner Evaluation Procedure .....	Page 7
2.4.3 Course Presentation .....	Page 7
2.4.4 Course Materials .....	Page 8
2.4.5 Course Content .....	Page 8
2.4.6 Suitability for Use in Canada .....	Page 9
<b>3. AN LBPA TRAINING STRATEGY FOR CANADA .....</b>	<b>Page 10</b>
3.1 Key Assumptions Made in Defining the Training Program Objectives ...	Page 10
3.1.1 Focussing on Abatement versus " <i>Risk Reduction</i> "	
Techniques to reduce LBP Exposure .....	Page 10
3.1.2 Abatement Work Process .....	Page 12
3.1.3 Identifying the Target Audience .....	Page 12
3.1.4 Job Categories .....	Page 13
3.1.5 A Skills-Based Training Model .....	Page 13
3.2 Training Program Objectives .....	Page 13
3.2.1 Defining the Entry Level Requirements .....	Page 14
3.2.2 Use of a Modularised Course Design to Meet .....	Page 14
3.2.3 The Importance of Training in Risk Communication .....	Page 16
3.2.4 Sample Course Outlines Designed to Meet	
the Assumptions and the Training Objectives .....	Page 16
3.3 Learner Evaluation Procedure .....	Page 16
3.4 Course Presentation Format .....	Page 17
3.4.1 Course Length .....	Page 17
3.5 Course Materials .....	Page 18
3.5.1 Student Manual .....	Page 18
3.5.2 Instructor Manual .....	Page 18
3.6 Course Content .....	Page 19
3.7 Consumer Seminar .....	Page 19

3.7.1	Target Audience	Page 19
3.7.2	Purpose	Page 19
3.7.3	Seminar Outline	Page 19
3.7.4	Teaching Materials	Page 19
3.8	Resolution of Key Technical Issues that Affect the Training Courses	Page 20
3.8.1	Lead Standards to be Followed in Canada	Page 20
3.8.2	Use of Paint Stripping Techniques	Page 20
3.8.3	Use of Test Kits for LBP Detection	Page 21
3.8.4	The Need to Determine the Best LBPA Techniques to be Followed	Page 21
3.8.5	Impact of Existing Canadian Lead Standards on the Training Courses	Page 21
3.8.6	Impact of Existing Waste Disposal Regulations on the Training Courses	Page 22
3.8.7	Research on <i>"In-Place Management"</i> to Reduce Risk Against LBP	Page 22
3.8.8	Conclusions on the Resolution of the Technical Issues	Page 23
4.	<b>IMPLEMENTATION STRATEGY</b>	Page 24
4.1	Factors Affecting the Uptake of LBPA Training	Page 24
4.1.1	Comparison of LBP to other Indoor Environment Hazards	Page 24
4.1.2	Impact of Energy Conservation Work on LBPA Uptake	Page 26
4.1.3	Conclusions on LBPA Uptake	Page 26
4.2	Preparation of the Training Materials	Page 27
4.2.1	Discussion of Training Material Preparation Options	Page 27
4.3	Industry Training Delivery Strategy	Page 28
4.3.1	Option 1: Private Sector Delivery	Page 28
4.3.2	Option 2: A Partnership Delivery	Page 28
4.3.2.1	Working With Industry	Page 28
4.3.2.2	Working With Community Colleges	Page 29
4.3.3	Option 3: Public Sector Delivery	Page 30
4.4	Consumer Seminar Implementation Strategy	Page 30
5.	<b>CONCLUSIONS AND RECOMMENDATIONS</b>	Page 31
5.1	Conclusions and Recommendations from Section 2	Page 31
5.2	Conclusions and Recommendations from Section 3	Page 31
5.3	Conclusions and Recommendations from Section 4	Page 32

## APPENDICES

APPENDIX 1: Technical Discussion of Course Evaluation Criteria  
APPENDIX 2: LSI Course Outline  
APPENDIX 3: Pennsylvania Lead Abatement Program  
APPENDIX 4: Aulson Course Outline  
APPENDIX 5: Principles of Competency-based Training Programs  
APPENDIX 6: Industry Training Course Outlines  
APPENDIX 7: Consumer Seminar Outline  
APPENDIX 8: Letters to Potential Partners

# 1. INTRODUCTION

---

Appin Associates and Training Unlimited were engaged by CMHC Housing Innovation Division (HID) to complete a curriculum review and develop a Lead-Based Paint Abatement (LBPA) training implementation strategy for Canada.

Abatement is a generic term in common usage in the US to refer to any method used to eliminate or to reduce occupant exposure to Lead-based Paint (LBP). Such methods include removal of paint, replacement of material (e.g., wood trim) containing LBP and encapsulation.

The project had the following objectives:

1. To identify and review existing training materials developed for the LBP abatement industry in the USA and to select those that could best meet the needs of a Lead-Based Paint (LBP) abatement industry training program in Canada.
2. To prepare a training curriculum for Canadian contractors interested in becoming LBP abatement specialists and an information seminar that will provide renovation contractors, homeowners and others with general information in order to recognize when LBP abatement specialists are required, as well as advice on reducing lead exposure during renovation work.
3. To design options for a Canada-wide training implementation strategy for the proposed training courses and the information seminar.

This report is the final report prepared according to the contract Terms of Reference. A draft version received comments from the Lead-Based Paint Abatement Training Subcommittee, formed by CMHC and other federal agencies interested in this topic.

Section 2 of this report reviews the existing courses attended by Team members.

Section 3 outlines a LBPA training strategy for Canada.

Section 4 provides an implementation strategy for the industry training courses and the consumer seminar.

Finally, Section 5 gives a list of conclusions and recommendations for each section.

## 2. REVIEW OF SELECTED COURSES

---

### 2.1 Selection of Courses to Review

There are now dozens of courses available throughout the USA. Industry magazines such as Lead Detection and Abatement Report publishes a schedule of courses offered. The Team was required under the Terms of Reference to attend two courses and to evaluate the course content and teaching methods for use in Canada.

Appin attended two courses in the USA. One was Leadtec Services, Inc. (LSI), Baltimore, MD and The Aulson Company, Inc., Massachusetts. Mr. J. Hockman attended the two day LSI course offered in Erie, PA and Mr. G. Wichenko attended the 5 day Inspecting and Abating LBP course in Boston, MA.

The Leadtec course was selected because it is an introductory course that has now been taught to an estimated 3,000 persons across the USA. It is one of the first courses offered and is focussed on preparing contractors to abate LBP in U.S. Department of Housing and Urban Development (HUD) public housing projects. The Aulson course was selected because it was specifically designed for contractors and inspectors, was based upon the Massachusetts regulations - one of the most stringent in the country - and offered some skill development.

### 2.2 Course Evaluation Criteria

The following set of criteria, taken from a systematic design approach to course development, have been used to evaluate the two training courses which the Team attended as well as the training materials that were made available to the Team by the delivery agents of these two courses. In this section, the evaluation criteria are presented first, then each course is described and evaluated using the course evaluation criteria. The evaluation criteria are presented in the order in which a course would be developed, namely:

- course objectives
- learner evaluation procedure
- course presentation format
- course materials and content

The courses were evaluated against these criteria. Please refer to Appendix 1 for a technical discussion of these criteria.

Finally, we have offered our opinions on the suitability of each course for use in Canada.

### 2.3 Evaluation of Leadtec Services, Inc. Two Day HUD Guidelines Course

The course was taught by Mr. J. McCabe, an associate of Mr. J. Keck, President of Leadtec Services Inc. Mr. McCabe worked with Mr. Keck and was responsible for the management of the 80 unit LBPA project in the City of Baltimore. The course was held in Erie, Pennsylvania in March, 1992 and was attended by Mr. J. Hockman. The course schedule is attached as Appendix 2.

#### 2.3.1 Course Objectives

The HUD Guidelines Course is a two-day standardized course for anyone who wishes to be involved in the LBPA industry. The course has been viewed by many jurisdictions, most recently the Pennsylvania Department of Health, as the minimum training requirement for people who wish to be involved in the LBPA industry in PA.

The first day of the course is targeted at workers, while all other participants in the industry, identified as contractors, supervisors, inspectors and project monitors, must attend both days of the course. This so-called "*advanced*" course is also deemed appropriate for public housing and HUD officials, architects and engineers, public health and building officials and industrial hygiene firms.

This particular course, held in Erie, PA was organized for a local group of construction workers who have been identified as possible abatement contractors under a recently initiated pilot project in Erie, Pittsburgh and Philadelphia, PA by the PA Department of Health.

Most of the approximately 20 attendees were hoping to be hired by one contractor who was also present. There were one or two other independent contractors, plus a person who has taken some X-ray Fluorescence (XRF) testing machine training and will probably be used as a tester by a consulting group that is managing the Pennsylvania Lead Abatement Program. An outline of the approach to be taken by the Pennsylvania Lead Abatement Program is attached as Appendix 3.

The certification from LSI on the 2 day "*HUD Guidelines*" Course was a requirement for anyone wishing to undertake work for this Program.

Critique: There are no stated learning objectives for the HUD Guidelines Course, making it difficult, if not impossible, to determine if the course accomplishes what it intends to accomplish. There are no student standards of performance, so it is impossible to gauge whether the test written at the end of the course is valid or reliable or not. There is a leap of faith that if one passes the test, one is fully equipped to deal with LBPA issues. This may not be of concern to HUD - they may just want to be able to say that "x" number of individuals have passed their exam. From their perspective, they may not be interested in how well the course participants can actually address LBP problems. However, if this is the course objective, it should be stated as such.

This two-day course is targeted at anyone who wishes to work in the LBPA industry. As indicated in the Course Evaluation Criteria section, the target audience is one of the factors that drives the development of a good training course. In this course, it seems that the need to have people who have passed the HUD Guideline test is the driving factor behind the development of this course. The HUD Guideline course does not distinguish among the different target audiences and, therefore, does not meet their different learning needs. The course designers seem to have attempted to put as much information into as short a time span possible while, at the same time, try to meet the needs of all possible participants in the LBPA industry. As a result, it is ineffective in truly meeting the needs of any of them. Everyone gets some information pertinent to their job within the industry, but none gets enough of the right type of information for their specific job.

Contractors, supervisors, inspectors, public housing authorities, field workers, all have different learning needs, as they all have different roles to play in the LBPA industry. LBPA courses should, therefore, differ for each of these target audiences dependent on their particular role. This course assumes that each player has the same learning need (i.e., to pass the test at the end of the course).

This particular course was organized specifically for workers who were expected to undertake abatement work. One would expect, then, that the course would be modified somewhat to account for the specific learning needs of this group (i.e., abatement procedure skills and knowledge). Despite the target group, less than one-third of the time was spent on the abatement process and the course proceeded along its predetermined path (i.e., the standard HUD Guidelines Course). Much of the first day was more relevant to the contractors, as opposed to the workers, as it dealt with issues of testing methods and accuracy, liability, insurance, waste disposal, etc. Some workers in the class questioned their need to know all this information in the depth and detail provided.

This is a good example of why clearly defined objectives and standards of performance are necessary and why the target audience must be considered in the development of any training course. Clearly, the instructors and the participants had different objectives and this predictably resulted in the workers not getting the learning they felt they required to do their job properly. One must question the value of this course in preparing an industry to address LBPA issues in the community. Again, it is difficult to make an assessment as there are no stated objectives for this course.

### 2.3.2 Learner Evaluation Procedure

A knowledge exam consisting of 33 true/false and multiple choice questions is administered at the end of the course. To allow for those with poor reading skills, the instructor read aloud all of the questions and response choices. The test focuses mainly on health issues related to lead poisoning, health and safety issues related to abatement work and HUD guidelines.

Critique: Given the amount of information that is covered in the course, this exam probably would not pass a reliability test (i.e. one could not conclude from this test that the participants knew and understood all of the information presented on the course). Further, no assessment of abatement procedures, fully one-third of the course, was done. The instructor cannot conclude that the participants are qualified to undertake LBPA work.

The purpose of the test appears to be one of passing or failing the participants. It is not viewed in any way as a learning tool, as there is no opportunity at the end of the course to provide further instruction to correct any misunderstandings or to re-instruct students. There is only one evaluation administered during the course which does not allow the instructor to check for understanding as the course proceeds, nor to give feedback to increase learning.

Because the test is administered at the end of the course and there is no opportunity to practice any of the information in the course, the responsibility for correctly applying the information presented is placed with the participant, and is done after the course is over, when there is no opportunity for feedback. This may result in less retention of learning and transfer of skills to the job. It also allows for non-standardized practices to develop in the field.

In the final analysis however, the appropriateness of the test cannot be questioned, as there are no stated objectives for the course and no statement of what the students should learn in the course. Therefore, one cannot judge the suitability of a written test over other evaluation means, nor can one judge the validity or reliability of the actual test instrument. However, one can say that more appropriate testing methods for workers would be an examination of abatement skills, for inspectors, an examination of use of testing equipment, and for contractors, an examination of the ability to plan the job. More effective testing methods would include skill demonstrations and case studies.

### 2.3.3 Course Presentation Format

The course is taught in a highly instructor-dependent manner. The presentations are all lectures, and for

the abatement procedures, lectures supported by slides. No discussions groups, demonstrations, practice sessions, or other student-centred activities were included in the delivery of the course.

Critique: Because there are no stated objectives for this course, there is no opportunity to comment on the relation between the objectives and the teaching strategies. If the course objective is simply to have participants pass the final test, one teaching strategy could be to hand out all the materials, have the participants read it at their convenience and subsequently write the test. It would certainly be a more inexpensive and probably as effective method of meeting this objective as spending two days in a classroom. The major criticism remains the lack of stated objectives and intended learning outcomes.

The Lead-Tec course is highly instructor dependent. There is little, if any, opportunity for learners to participate in the teaching-learning process. In this course, the participants listen and the instructor presents the information. Other than this one-way communication, there is no interaction between the participants and the instructor, and no planned interaction among the participants themselves. The course makes no accommodation for participants' reasons for attending the course nor any previous skills and experience of the participants; it assumes no experience so that the participants are reduced to an homogenous grouping, all having the same learning needs and learning styles. This makes it easy for the instructor to plan and control the course, but results in a less effective learning process, sets up the likelihood of participant frustration, which effectively blocks learning. Because the communication is mainly one-way, there is no opportunity to check or provide feedback on learner understanding.

Maintaining participant interest in this course depends almost entirely on the instructor. Because the course format consists of lectures, it demands an entertaining, highly professional instructor that can hold the attention of the participants for two days running. This is most difficult to do regardless of instructor skill level. It would be difficult to train instructors to teach this course who did not already possess the right combination of personality and style. As a result, this course is not one that can be easily transferred from one instructor to another.

### 2.3.4 Course Materials

The LSI course materials are comprised of the newsletter *Baltimore Leadletter*, published by LSI, which covers various subjects about LBPA work, ranging from government guidelines and regulations, to information on LBPA procedures and hazards of lead, to announcements about government programs. The course materials also include copies of state regulations and some case studies.

Included in the course materials are several checklists that different industry players (e.g., contractor, worker, inspector) should follow to ensure that all required steps of the work they are to do are completed. However, these checklists do not give any details on how the actual work is to be done. For example, the Disposal Planning Checklist asks "*Have you established a standard procedure for bagging and handling wastes?*", but there is no information on what an acceptable procedure is.

A video entitled Lead Paint Abatement: Problems and Possible Solutions is shown during the course.

No instructor manual was available for review.

Critique: There is no organization to the course manual; checklists and case studies are intermixed with the *Baltimore Leadletter* and government regulations. There is no table of contents nor index to indicate what is contained in the materials or to enable someone to locate particular information.

The course manual is incomplete and requires significant note-taking by the learner so that his/her information base is complete. This approach does not consider that written communication skills are probably not a strong point of most of the participants, particularly workers and perhaps contractors. As a result, their information base will probably be lacking.

Much of the critical information (i.e., abatement procedures) are presented through a series of slides, yet no illustrations or photographs appear in the course manual.

### 2.3.5 Course Content

The two-day course outline covers almost all aspects of LBPA work, ranging from the historical and health perspectives of the effects of lead poisoning to the sources and routes of exposure. The issues of health effects, lead poisoning and other materials covered in the first day were academic in nature, and although they were covered in depth and well presented, were perhaps presented in too much detail for this audience. LBPA methods and worker protection are covered as are testing and monitoring procedures. Federal regulations and guidelines are included as well.

With respect to actual abatement procedures, few descriptions of techniques and methods were covered in great depth. Site preparation and containment process, the abatement methods (replacement, encapsulation and paint removal), clean-up of an abatement site, clearance testing and disposal of materials were all covered using a series of slides and instructor narration that contained much personal anecdotal information. A half hour was spent on reviewing the Pennsylvania program where a risk reduction through partial abatements (rather than full abatement program) may be necessary due to budget constraints.

A more appropriate approach, particularly with this target group, would be to illustrate the procedures through the slide presentation, then follow this with practice on mock-ups or an actual building site.

Because the course design attempts to meet all the needs of all players in the lead abatement industry, everyone gets some information pertinent to their job within the industry, but no one gets enough of the right type of material for their specific job. For example, a course designed for a worker should include detailed performance checklists that can be used on the job-site until these procedures become habitual. These individuals should have some general information on the types of lead-testing equipment available and how they work, but do not need the detail that the lead inspector would require. Conversely, the inspector need not have the detailed performance checklists on how to do the lead abatement and containment procedures.

### 2.3.6 Suitability for Use in Canada

Prior to deciding the suitability of this course for use in Canada, it is essential that the purpose of a course or courses be identified and the learning objectives made clear for each of the players in the LBPA industry. Once these have been identified, the roles of the players determined, and their specific learning requirements identified, it can then be determined whether or not the LSI course or parts thereof, can be adopted for use in Canada.

Having said this, if one assumes that an information/orientation session for public housing officials, civil servants and property managers will be part of the LBPA training strategy in Canada, much of the LSI course materials would be applicable and could be used. The course manual would require reorganizing and adapting to reflect Canadian conditions, but much of the information contained in the manual could be directly transferred.

For the reason discussed above, this course would not be appropriate for LBPA workers, contractors and inspectors. Courses for these target audiences need to be much more practical, hands-on and less classroom oriented.

The written test is inappropriate for this information seminar. If a test is deemed to be desirable, an open-book exam is preferred. If not, the test is more an evaluation of memorization skills than of knowledge and understanding. Any test that is developed should be more reflective of the actual content covered in the course and be more extensive than the LSI course test.

The video and slides developed for this course would be useful and it is recommended that these be purchased and rights for use in Canada be obtained. If this is not possible, it is recommended that comparable visuals be produced for use in all LBPA training courses.

Although none of the course manual can be directly "*lifted*", all of the material contained in the manual can be adapted for use in Canada.

### 2.4 Evaluation of The Aulson Company, Inc. Five Day Contractor/Inspector Course

This course was taught by Ms. J. Ryan, the Occupational Health and Safety Trainer for Aulson. The 20 participants included employees from painter contractors, two large asbestos removal companies, a real estate agent, a house designer and several consultants. Mr. G. Wichenko attended this course. The course schedule is attached as Appendix 4.

#### 2.4.1 Course Objectives

The purpose of the five-day Aulson course is to provide classroom instruction on how to safely perform LBPA work in residential properties of all types. This instruction is a requirement of the Massachusetts Department of Labour and Industries.

To meet the requirements of the Commonwealth of Massachusetts Department of Public Health, inspectors must attend classroom instruction followed by an apprenticeship program. Because there is some overlap in the course curriculum for both inspectors and contractors, the Aulson course was developed to meet the needs of both.

The course is targeted at preparing participants to write the exam which contractors and inspectors are required to pass if they are to be certified to do LBPA work in Massachusetts.

The five-day course is organized to cover the 2.5 day workers' course; the 3 day supervisors' course; the 4 day contractors' course and the 2.5 day inspectors' course.

Critique: The Aulson course has a stated objective, but does not specify what the learner must know in order to meet that objective. One must assume by the nature and content of the exam that it does, in fact, test the knowledge that is required by the Massachusetts regulatory agencies, but there is no way of determining this in the absence of performance standards.

### 2.4.2 Learner Evaluation Procedure

The learner evaluation procedure consisted of the written exam administered at the end of the course. The exam deals almost exclusively with the regulations associated with LBPA work. Knowledge and skills related to doing the tasks required of a worker, contractor or inspector, are given a lower priority.

Critique: In order to do work safely (and thereby meet the objectives of the course), contractors and inspectors must be able to do the abatement procedures efficiently and accurately. Despite this, the exam focuses mainly on history of lead-based poisoning and the state and health regulations governing LBPA work. The exam does not really measure the knowledge that the contractors and inspectors must know to be able to do the work safely. Furthermore, a written exam is an unacceptable way of measuring the ability to actually do the work. A performance test is the only reliable and valid means of evaluating this aspect.

Because this exam is oriented towards regulations and standards, it is more a test of the participants' ability to memorize dates and regulation numbers than it is a measure of knowledge about LBPA work.

### 2.4.3 Course Presentation

The lecture method was the predominate presentation method used in the course. Items such as preparation of the work area and the containment area, the abatement methods, clean-up of an abatement site, clearance testing and disposal of materials were covered using a series of slides from HUD and instructor narration that contained much information from Aulson jobs. Two hours were spent practising dry scraping on the mockups of walls and windows, but there were no demonstrations or direction on how to use the tools for the job.

Instructors were reluctant to share detailed job cost information and job management techniques for these abatement procedures, which can only be learned through experience. This information was considered a "*trade secret*", but is essential to become successful abatement specialists .

Critique: The assumption made by the regulatory departments is that knowledge-based instruction and examination is sufficient to prepare individuals to safely *perform* LBPA work. This is an incorrect assumption. To prepare individuals to perform skills accurately and efficiently, instruction should be skills-based and provide time for practice, evaluation and feedback at doing the actual work. Studies have shown that the amount of learning is greater and that skills are retained for a longer period of time after the instruction.

A more appropriate way of organizing this course would be to distribute the course manual to be read by participants prior to the course. At the course itself, the knowledge-based material would be reviewed and any questions, concerns or problem areas dealt with. The bulk of the course would have been better spent demonstrating and practising the abatement and inspection procedures followed by an evaluation of these performance skills.

These course presentation methods would then more closely meet the course objective of having participants safely perform LBPA work.

There were no student-directed learning activities planned for this course. The instructor had prepared lectures and intended to simply work through these without allowing for student interaction. The group in attendance had their own learning objectives and areas of interest which were not considered in planning the course. Many were keenly interested in the subject and had done much research prior to attending the course. This prior knowledge was not considered by the instructors in their course planning and delivery. As a result, the instructor was frustrated in her attempts to move through her agenda due to the many questions and interruptions by the attendees. The participants were frustrated because they questioned the need to know and memorize the Massachusetts regulations and guidelines. However, they accepted the need for learning these facts when told that it was needed to pass the exams.

Again, not allowing time for agreeing on a common set of objectives and determining the nature of the participants, resulted in obstructions to learning during the course. These incidents could have been prevented had the instructors planned into their

course an opportunity for the participants to have a say in what they would learn and how they would learn it.

No instructor manual was available for review. It did not appear in the presentation that one existed.

#### 2.4.4 Course Materials

Course materials consisted of a series of slides, wall mock-ups and tools to practise dry scraping and a course manual.

The manual used in the course is entitled "*Inspecting and Abating Lead-Based Paint*" and covers all aspects of LBPA work, from the health effects of lead poisoning to testing for the presence of lead, to inspection procedures, worker protection, abatement procedures and waste disposal. Some topic areas are covered in much greater detail than others.

The Appendices contain reference material, report forms and sample letters for use by the Massachusetts Housing Authority, but could be adapted for use by others.

The course manual is intended to be a reference manual as opposed to a student text; the information contained in the manual is expanded upon by the instructor during course delivery.

Critique: The slides and mock-ups are excellent examples of effective learning tools for those who will be doing the actual abatement and inspection procedures. The course manual is deficient in that it does not include any illustrations nor performance checklists on how to do the work. The only illustrations are line drawings showing the different types of respirators and one showing an individual wearing a respirator. It is fairly well organized and the table of contents facilitates use of the manual for reference purposes.

#### 2.4.5 Course Content

The course manual adequately covers all sections dealing with subjects that are derived from the regulations or found on the exam, but gives cursory treatment to other subjects. The section on lead paint abatement options and contract specifications is superficial at best, and there is only sketchy information on managing the job and preparing a contract.

Critique: Although the stated objective of the course is to have participants safely perform LBPA work, the real (or hidden) objective, was to have the participants pass the contractor's exam and to prepare participants for the State inspector's exam. Therefore, most of the course concentrated on the history of lead poisoning, Massachusetts regulations and guidelines associated with LBPA work and health effects of lead poisoning because they were likely questions on either exam. All of these subjects were dealt with in some depth and adequately covered during the course.

Only about 25% of the time was spent on the abatement process, including practising dry scraping techniques. However, this practice time was not included in the first 2.5 days when the workers, to whom this practice time would most relate, were in attendance. Further, it is only as a result of questioning by the participants that issues such as testing methods and accuracy, liability, insurance and waste disposal were covered. These would seem to be important issues for all intended target groups.

Clearly specifying objectives and student standards of performance would provide direction for the course content. This would avoid the reluctance of instructors to expand on "*trade secrets*". If these so-called secrets were essential learning for the participants to meet the standards of performance, there would be no question of including them in the instruction and student manual.

#### 2.4.6 Suitability for Use in Canada

While the Aulson course is derived from Massachusetts regulations and HUD guidelines and the manual is not a model to follow in the development of a student manual, some of the material could be used in Canada. Information contained in the sections related to health effects of lead poisoning, the medical surveillance program, the use of sodium sulphide and XRF, the inspection procedures, safe work practices and use of safety equipment could be incorporated into relevant Canadian student manuals (i.e., worker, contractor or inspector manual). The material would need to be enhanced with graphics, illustrations and photographs.

The focus of the course is inappropriate for use in Canada as are the teaching methods. These do not reflect adult education principles nor do they prepare the participants to safely perform LBPA work.

### 3. **AN LBPA TRAINING STRATEGY FOR CANADA**

---

A training strategy encompasses the definition of objectives for the training programs and gives direction on the design and development of the programs and related materials to meet these objectives. The training strategy outlined in this section will be based on and should accommodate the growth and development of the LBPA industry in Canada.

This section outlines the components of a training strategy, namely:

- key assumptions made in defining the training program objectives
- training objectives
- learner evaluation procedure
- course presentation format
- course materials
- course content

Readers should note that the components are the same criteria used to evaluate the two courses in the previous section to maintain consistency and because this is the accepted practise for designing courses.

#### 3.1 Key Assumptions Made in Defining the Training Program Objectives

As stated previously, a good training course makes explicit the objectives of the course and states exactly what each student must accomplish in order to satisfy these objectives. The Team recognises that the LBP is an emerging issue and the abatement industry is in its embryonic state. Accordingly, the Team has made assumptions that have helped define the objectives for the training program for LBPA in Canada. These assumptions are listed below.

##### 3.1.1 Focussing on Abatement versus "Risk Reduction" Techniques to reduce LBP Exposure

The first assumption that will affect the course objective is the notion that courses in Canada should focus on "risk reduction". One is reducing the risk of LBP exposure by occupants of "contaminated" buildings, as well as reducing the risk during LBP

removal or encapsulation. The occupants might include the worker (be they a contractor or crew member) or homeowner. Risk reduction also means reducing the risk to the homeowners during any renovation (such as a kitchen renovation) of any older (pre-1960) dwelling that might contain LBP. The important point is that the work required to reduce the risk of lead exposure would not necessarily require "full abatement" following the Massachusetts or Maryland model.

LBPA courses in the USA have focused on abatement by removal, encapsulation or replacement. This approach has largely been driven by legislation in states such as Massachusetts or Maryland that now require large numbers of houses to be abated. No such legislative framework exists in Canada, but there is a concern from many public officials that do-it-yourself homeowners and renovators may disturb LBP during a renovation project. Homeowners who have no plans or funds to abate LBP fully are also at risk and may only be able to employ "housekeeping" (called "in-place management" by HUD) measures to reduce the risk of lead exposure.

The importance of teaching risk reduction measures was emphasised in the LBPA Training Subcommittee meeting minutes of May 20, 1992. The minutes state that *"the main objective of any course should be to minimise homeowner exposure to leaded dust created by improper renovation. Another objective is to have a course that is aimed at renovation contractors, which would also focus on risk reduction, but could encompass abatement"* (p. 1).

The central idea behind "risk reduction" is to lessen the LBP hazard in a manner that does not always involve the expense of full abatement. In response to the Committee's concerns, this idea of risk reduction has been explored extensively by the Team in the design of its courses and the training strategy. We have identified three components of "risk reduction", each of which has an impact on the proposed training strategy.

Risk Reduction for Construction Workers: The first component of risk reduction is for workers involved in renovation projects not specifically designed to abate LBP. S. Rosmarin, writing on this issue in an article entitled **Lead and the Construction Industry** in the June 1992 edition of Lead Detection and Abatement Report, notes that "*Construction [Renovation] activity... creates exactly the type on environment in which lead poisoning occurs.*" (p. 11). She explains that there is very little legislation governing the construction industry relating to disturbance of LBP. She cited the example of a painting contractor sentenced for lead-abatement violations. She described a program of training which closely parallels most of the course material proposed by the Team. The notion of "*risk reduction*" in this case is really abatement by another name because the containment procedures are necessary for worker protection and for reducing risk to homeowners during a renovation.

There will no doubt be objections by contractors to requiring workers to take LBPA training, if that is not their speciality. However, such training for demolition crews, painting crews, window and door installers and carpenters might become a higher priority, or even mandatory, if such renovation workers are diagnosed with lead poisoning and have to go on compensation. Insurance companies and compensation boards may insist upon such training or give premium incentives to reduce claims costs. The Team suggests that since there is minimal, if any difference in the training requirements for risk reduction and full abatement, the safer route for contractors is to train workers who may be exposed to LBP with the material suggested by the Team, even though their specialty is not abatement of LBP.

Risk Reduction for Homeowners Who Can't Afford to Abate LBP: Another notion of "*risk reduction*" is the application of housekeeping methods for homeowners to reduce lead dust, such as removing carpets that collect dust, cleaning techniques and equipment to control dust and keeping children from playing in lead-contaminated soil. Given the current focus of LBPA techniques on abatement, there is very little information on these methods referred to as "*in-place management*" methods. The HUD document Reducing the Risks of Lead Poisoning in Public Housing: A Guide for In-Place Management outlines procedures for cleaning with HEPA vacuums

and cleaning with high phosphate cleaners (see Indoor Air Review March, 1992).

Even though such techniques are new, the Team has proposed to incorporate such methods in the contractor and consumer courses to the best extent possible.

Risk Reduction using a System of Priorities: A final notion of "*risk reduction*" is that a homeowner might want the risk of lead paint reduced, but he or she cannot afford full abatement throughout the house following the Maryland or Massachusetts definition. In this case, "*risk reduction*" means a judicious application of LBPA techniques to the priority areas. It is much like the LBPA program in Pennsylvania. From a training perspective, a worker still needs to be trained in the full spectrum of abatement methods. The question is the depth of application of the methods to each area of the house. Contractors would still learn all the current methods available, but would also learn about setting priorities for reducing risk in the strategy development section of the course.

This priorities setting exercise can be described as follows. Once a concern is expressed by a homeowner, an evaluation of the hazard would be done by a qualified person. This evaluation could include examining the paint condition and general dust levels, looking at the age and extent of carpeting (as research has shown that removing lead dust from carpets is very difficult) and whether a renovation is contemplated or not. A high risk situation might exist if a pregnant woman lives in the house, if the children exhibit symptoms or if there has been a recent renovation. Medical attention is advised for high risk situations. If the house is in a lower risk category, a more detailed house evaluation might be done to identify the amount of lead in the paint or the lead levels in dust to determine where abatement is absolutely necessary. Based on the assessment of the risk, a combination of abatement and "*in-place management*" measures might be recommended.

Inspectors in particular and contractors in general would use this approach to develop a mix of abatement and "*in-place management*" measures appropriate for each customer. Clearly contractors would have little interest in "*in-place management*" methods because they do not lead to much work, but

may be willing to apply the methods if they can be combined with abatement work that will make money or reduce callbacks.

### 3.1.2 Abatement Work Process

Regardless of whether the work involves full abatement with a component of risk reduction or not, we have assumed that there will be a well defined LBPA general work process. If abatement using a contractor is involved, then the process would be as follows: An LBP inspection would be done by an individual who is independent of the contractor responsible for the deleading work. After the inspection, a tender based on the deleading report is prepared. The contractor who wins the tender then deleads the house either with his own employees or with contracted workers who have completed a training program. At the end of the job, the inspector re-inspects the job to ensure that the deleading work has been done according to the initial report. The inspector then signs off on the job and allows the occupants to return to the dwelling.

In some cases, particularly for private homeowners, the contractor may act as both inspector and contractor. Therefore, the training strategy must accommodate those who are interested in becoming either one or the other, or both.

Under our model, some LBPA work in the building might also include *"in-place management"*. While we suggest that *"in-place management"* is important, other than giving general advice on *"in-place management"* (i.e., handing out a government-prepared brochure), we doubt that most contractors would want to do such work because it is not construction work. We also suggest that most contractors would also not want to assume any liability for *"in-place management"* by homeowners because they would not have any control over how such *"in-place management"* is implemented and would not earn any revenue from such work.

### 3.1.3 Identifying the Target Audience

Training courses are recommended for three target groups in the LBPA industry: worker, contractor and inspector. (While a distinction is drawn in

Massachusetts between contractors and supervisors, the Team has assumed that contractors and supervisors will have the same learning requirements.)

There are four distinct courses required for the target audiences, each identified with differing objectives. The worker course can be modified to address the learning requirements of the three specialist-workers or the generalist worker. We have used the term *"specialist"* to refer to a worker who is trained in only one or more abatement methods. The term *"generalist"* is a worker who has been trained to undertake all types of abatement work. In addition, provision has been made for a combined contractor/inspector course.

The worker course(s) will be skills-based and will focus on the actual performance of the LBPA work. The contractor course will combine both practical application of the abatement procedures with activities related to planning and supervising this work. The inspector course will provide theory and practice in the different testing procedures, doing an inspection and interpreting and presenting the results.

There was some discussion at the May 20, 1992 LBPA Training Sub-committee as to whether the focus was to create a separate sub-trade or have contractors adopt the techniques. In the absence of a regulatory environment that would create a sub-trade (as in Massachusetts), contractors would likely have individuals in their crews with the skills. In the current renovation business, many small general contractors are one or two person operations who hire sub-trades to do drywalling, flooring, painting, etc. From the point of view of the contractor, it probably makes sense to have a person trained specifically in LBPA to remove the lead and prepare the work surfaces so that the painters and carpenters (who are more highly paid) do not have to worry about the LBP. Window and door installers would likely incorporate the LBP containment procedures into their work because the steps (especially in the case of window replacements) are simple to do. Thus, while we do not see a specific sub-trade evolving immediately, many general contractors would probably contract out the work to trained individuals as they would the framing, drywall or concrete work.

Finally, the Team also suggests that there is a need for a course for public officials and property management people who are responsible for dealing with LBPA/risk reduction issues in the buildings they manage.

The public officials/property managers' course will be knowledge-based, providing all the information needed to address any questions posed on LBPA/risk reduction issues or be able to redirect the caller to the appropriate place.

The Team has not designed a course for this latter group, as we are unsure of the government's interest or role in providing such a course. However, it can be assumed that the student manual developed for the industry training courses would be more than adequate for this seminar-type course.

#### 3.1.4 Job Categories Within the Worker Target Group

The next assumption is that there are four distinct jobs within the actual abatement work that will likely be done by three separate individuals or crews (specialists), but that could be done by one individual or crew (generalist). The four distinct jobs are 1) Site Preparation; 2) Window Removal and Carpentry work; 3) Painting; and 4) Site Clean-up.

Jobs 1 and 4 should be done by labourers who are trained to do this work properly and who are highly sensitized to the need to do a thorough and efficient job. Window removal and replacement and finishing trim correspond closely with window installers and carpenters. Job 3 is obviously most akin to the painting trade.

The training strategy must accommodate the learning requirements of all target audiences. The training curriculum must also be flexible enough to respond to changing circumstances in the industry and to changing knowledge and technology.

#### 3.1.5 A Skills-Based Training Model

The training curriculum proposed is based upon a course design model that follows accepted and recognized adult education principles and practices and accepts the fact that there are unique and distinct competencies required by each of the target groups.

The model proposed is based upon the principles of competency-based training programs as outlined by W. Blank in his Handbook for Developing Competency-Based Training Programs (see Appendix 5) and follows the design steps used to evaluate the courses in Section 2.

Under this model, only those skills and knowledge that are required to do the job are taught. Each job is analyzed according to the functions and tasks that are performed. These functions and tasks are organized into distinct teaching modules.

These training methods have been adopted by many community college and skills training schools across North America as the preferred method of teaching job skills including construction work, energy conservation retrofit techniques and occupational health and safety.

### 3.2 Training Program Objectives

The training program objective is to design a course or courses for the target audience identified in a manner that meets the needs of the renovation industry and which is taught in a fashion with the requirements of adult learners.

In applying the competency-based training model to the target audience, each of the roles within that audience were analyzed and separate function/task lists (separate course curricula) created for each role. Sample course outlines are included in Appendix 6. The next step is to define the standards of performance - what the student must know or do - for each task listed. These standards of performance would be defined during the process of course development.

Understandably, there is considerable overlap in the topics or teaching modules between the three curricula. There is a difference in some of these topics however, in how they are taught, and the comprehensiveness with which they are taught. For example, the inspector needs to learn how to actually do an inspection and prepare an inspection report, whereas the contractor need only know of the different types of inspection possible and how to interpret the report and implement its recommendations.

Similarly, the contractor will need to know what work has to be done in an LBPA/risk reduction job, but the worker will have to be skilled in actually doing the abatement work. Therefore, in the worker course, the worker must actually practice some of the skills required, whereas the contractor need only learn what the requirements are.

There are also some elements that are common to all curricula that will be taught to the same degree and will cover the same information, such as the health effects of lead, sources, etc.

Because the same information will be covered in all three courses, only one student manual need be developed. The possible exception is the inspector course, where a separate section on the use of inspection equipment and preparing an inspection report would be developed. However, because the learning requirements of inspector's, contractor's and worker's courses are different, separate instructor manuals detailing the different teaching approaches and student activities in the classroom and on-site, will need to be developed for each course. The instructor manuals for the courses will be distinct from one another to reflect the different target audiences and differing objectives of the courses. Differences will appear in the teaching approaches used, classroom activities and emphasis.

Teaching materials, such as slides and videotapes, would be transferable between courses.

### 3.2.1 Defining the Entry Level Requirements

The competency based training model also requires that the knowledge and skills needed by participants prior to enrolling in a course be specified. There are called entry level requirements and are assessed by means of a pre-course test of knowledge and skills. The pre-course test is based on the standards of performance for each task in the function/task listing (see Appendix 6).

The information obtained from the pre-course assessment is used by the instructor to adjust the course to meet the specific learning requirements of each individual class. This avoids frustration and obstructions to learning during the course itself. The pre-course assessment avoids teaching students things

they already know, and ensures that topics that are of great interest will be covered. Using the information gleaned from the pre-course assessment also involves the participants in determining what it is they will learn, which results in a *"buy-in"* to the learning process. The results of the pre-course assessment must be balanced by the instructor's objectives in ensuring the course requirements are covered.

The pre-course assessment can also be administered to determine whether an individual need participate in any of the training; the individual may have acquired all of the skills and knowledge in some other way. The pre-course assessment serves as a *"challenge"* test for these individuals. Students who opt for this route would only have to study the topics that they do not challenge for successfully (i.e., pass) or which are new topics.

It is also necessary to identify the entry level requirements to ensure that participants have the pre-requisite skills or knowledge necessary to learn the material presented in the course. Additional remedial instruction may be required in some instances. The LBPA/risk reduction training strategy requires that course participants have specific knowledge, skill and experience in the housing renovation industry prior to enrolling in any of the courses. The courses are not designed to provide new entrants to the industry with all of the complementary skills they would require to do abatement work, such as how to remove and re-install a window or door, or how to install finish trim around windows. The training strategy assumes that course participants will be competent in building construction, general renovation skills and carpentry skills.

Specific entry level requirements for each of the courses would be identified in the process of course development.

### 3.2.2 Use of a Modularised Course Design to Meet the Training Objectives

The modularised design of the curricula allows for complete flexibility in meeting the learning requirements of the industry regardless of its stage of evolution. Each course is made up of stand-alone modules that can be mixed and matched to meet the learning requirements of any particular target group.

For example, if one group of contractors also wishes to be trained as inspectors, the modules that are found only in the inspector course would be added to the contractor course. This design eliminates the need for a qualified LBPA contractor to also attend an entire inspector course. Only those modules that are specific to the inspector course would be required by such contractors.

Similarly, the workers' course can be adapted so that only those modules required by the worker for his/her role would be included in the course. If a worker wishes to take the contractor course, s/he would be required to take only those modules that were not covered in the worker course.

The modularised design allows the instructor to tailor the course to the exact learning requirements of the target audience.

Initially, one course could be offered that meets the requirements of all three roles and would combine modules from each of the three curricula (contractor, inspector, worker). As the roles within the industry become more refined and distinct from one another, separate courses would be offered.

There are other advantages to this modularised design. It allows movement from one job in the industry to another. For example, if an individual takes the contractor course then wishes to become an inspector, s/he would simply take those modules that are not covered in the contractor course, rather than having to participate in a full inspector's course. If the contractor also wished to learn the abatement skills, s/he would simply participate in the skill modules from the worker course, rather than having to take the entire course. A "challenge" described previously system could also be established whereby participants could complete a written and performance evaluation in order to demonstrate competency. Successful completion would eliminate the need for course attendance.

The modularised design allows the courses to be tailored to a particular audience and to make provision for their entry level skills. For example, in the worker course, participants who are already highly skilled window and door installers, would not participate in the section of the course dealing with this topic.

The course would be shortened by the length of the module deleted from the course agenda. To ensure that participants indeed had the skills required by this module, they would challenge the material by writing an exam or demonstrating the skills.

The course could also be altered if the training provided in any of the modules had been obtained elsewhere.

For example, participants may already be trained in the use of the personal safety equipment, or this could be identified as a course pre-requisite. This would have the effect of shortening the course, while still providing the required level and quality of training.

Since we have assumed that there are four distinct jobs within the actual abatement work process (1. Site preparation; 2. Window/trim removal/encapsulation and related carpentry work; 3. Paint removal and repainting after cleanup; 4. Site clean-up), the modularised design allows for integration of related modules into existing trades within the renovation industry. Jobs 1 and 4 would be done by labourers who are trained to do this work properly and who are highly sensitized to the need to do a thorough and efficient job. Job 2, window removal and replacement of finishing trim or metal encapsulation (usually aluminium), corresponds closely with the existing skills of window installers and carpenters. Job 3 is obviously most akin to the painting trade.

Even though the assumption has been made that there would not be a separate sub-trade, the modularised approach allows for integration with existing trades, the creation of a new sub-trade, or specialization of individuals in a crew. Only those modules related to the existing trades would be integrated with their existing apprenticeship program. If a new sub-trade evolved, the curriculum would include all components of the worker training course. The modularised approach is also responsive to those contractors who wish to develop specialized skills within their crews. Although a carpenter will be required for window installation and trim work, a contractor may wish to train a general labourer to do the site preparation and clean-up (at less cost to the contractor than having the carpenter do this work).

The course curricula would reflect these varying training requirements by teaching only those modules that relate to the work to be performed, or by teaching a topic either as a skill session or a knowledge session.

The differences between the courses would be whether the worker required either skill or knowledge in a particular task. For example, the carpenter would need to know what was involved in preparing the work site to know that it was done properly before s/he commenced work, but would not need to be able to prepare the site her/himself, unless s/he was intending to do this work as well. On the other hand, the labourer would need to demonstrate competency in preparing the site.

A final advantage of the modularised approach is that it allows the course to be delivered either as a single block or at intervals over a longer time period (i.e., evening sessions, consecutive weekends, one day per week, etc.) depending on the needs of the target audience.

### 3.2.3 The Importance of Training in Risk Communication

Of particular note is one topic that should be emphasized with all target groups: Communicate Risk. In this module, course participants will be trained to deal with clients, workers, staff and others in a sensitive way that effectively communicates the risks associated with lead paint and LBPA/risk reduction work, but which does not cause them to panic. For example, if any of the people with whom the client comes into contact causes him/her to panic, this will generate unnecessary vigilance and callbacks. However, if the risk is not communicated effectively, the client or worker may be too complacent and this could interfere with the job. There have been situations in the USA where homeowners have gone into the home after the end of the work day, removed the polyethylene from the kitchen area (which has been carefully taped down by the LBPA crew) and cooked a meal (prior to the LBPA work being completed).

### 3.2.4 Sample Course Outlines Designed to Meet the Assumptions and the Training Objectives

Sample course outlines (shown as function/task listings) for each of the worker, contractor and inspector courses are included in Appendix 6, together with a course outline of a combined contractor/inspector course. The worker course outline would remain the same whether the course objective would be to train specialists or generalists. Changes in instructional approach would be made dependent on whether a topic would be delivered as a skill session or knowledge session. Specialists would receive skill lessons in those jobs that they intend to do, and knowledge lessons in other relevant areas. Generalists, who may have to do work in all jobs at all levels, would receive all the relevant knowledge and skill lessons. (These terms were defined earlier in the report.)

These course outlines have been based on the role each of the target audiences will play in the industry. Standards of performance for each of the topic areas need to be developed, stating exactly what each target group must know or do.

### 3.3 Learner Evaluation Procedure

Now that the course outlines have been defined, the next step is to design a learner evaluation procedure. Several types of evaluation procedures must be developed to reliably test the knowledge and performance of the participants. The first evaluation that should be done is a pre-course evaluation to determine the entry level skills and knowledge of the participants and what they hope to achieve from the course. This has been described earlier.

The second is evaluation during the course.

Informal evaluations during the course should be conducted. These can take the form of questions to the group during a review of slides of abatement procedures, for example, or providing feedback on group responses to case studies. These information evaluation-feedback sessions should be conducted in a non-threatening manner and used for the purpose of determining weak areas, and areas that need further emphasis.

Formal evaluations should include written tests and performance tests, depending on the required standards of performance. These tests should evaluate student understanding and performance, rather than memorization of facts, dates and guidelines. If such facts are deemed to be essential for regulatory purposes, the exam should be open book, so that students learn to use the manual to find the information they are looking for.

### 3.4 Course Presentation Format

Because adult learners are not used to being in the classroom and may feel intimidated, it is important that some time be spent at the beginning of the course to make people feel at ease. A get-to-know-you activity should be incorporated so that individuals feel comfortable interacting with one another and with the instructor.

Adult learners come with a lot of previous knowledge, skill and experience, and want to participate in their learning in an active way; they know what they want to learn and having them participate in setting the course objectives will serve to further motivate them as learners. Therefore, some time should be devoted at the beginning of the course to presenting the results of the pre-course assessment and showing how these results have been incorporated into the course planning. There should be general agreement among participants on the objectives prior to moving on into the course.

Teaching strategies should be chosen to suit the objectives and learning requirements of each of the target groups. Appropriate teaching strategies would include reading assignments, discussion groups, case studies, and lectures for knowledge-based objectives. Demonstrations, practice with mock-ups, videos and presentations with slides of procedures are all useful presentation methods for skill acquisition. K. Martin, quoted in the August 1992 issue of Indoor Air Review, notes that *"there should be some amount of hands-on training, some skills component"* (p. 20).

The issue of practice with health and safety equipment is key in this course. K. Martin, in the same issue, notes that *"those three or four days of courses are the only time those people are going to learn about health and safety. No one's going to sit*

*down with the workers at the site and show them how to use a respirator"*. (p. 20).

Rather than using lectures for information transfer, it is recommended that prior reading assignments be given to the class and that they come prepared to answer questions on this reading material. A review of the key points through a question period, case study, group discussion or mini-quiz are all techniques that can be used to ensure that the students have acquired this information and to identify any areas that may need some instruction. This is one way in which the course can be shortened or time freed up to spend on other learning activities.

#### 3.4.1 Course Length

The course length will be determined by the teaching strategies used and the prior skill, knowledge and experience of the course participants, and whether any modules are deleted from the course curriculum. Based on previous course development experience, the Team estimates the course length for each target group as:

Workers (Generalist Course)	3.5 days
Worker (Preparation & Clean-Up)	2.5 days
Worker (Carpentry/Window Installer)	3.0 days
Worker (Painter)	2.0 days
Contractors:	4.0 days
Inspectors:	2.5 days
Combined Contractor/Inspector Course:	5.0 days
Public Officials Course:	2.0 days

The modularised design allows for flexibility in implementation to accommodate the industry. For example, the courses could be implemented over a number of weeks in the evenings, two days per week for two weeks, etc. Courses could be shortened by having students complete pre-reading assignments and coming to the course prepared to write exams on various knowledge-based topics.

It has been demonstrated that industry participants will attend the full course if they are consulted about scheduling and their time constraints are accommodated.

If there is a demonstrated business opportunity, it has also been demonstrated that industry members will "make time" to attend the training required to take advantage of the opportunity.

The Team notes that in the August, 1992 issue of Indoor Air Review, K. Martin is also quoted as saying "trying to train someone in lead abatement in a few days' time is crazy in general..." (p. 20).

This same article also quotes Mr. V. Coluccio, the president for the National Lead Abatement Council, who states that "in the next few years, as requirements for lead abatement outpaces demand, we are going to witness an increase in the number of lead poisonings which are caused by faulty lead abatements... An antidote to poor abatement procedures is a strong training program which teaches people how to become professional workers, supervisors, contractors and inspectors" (p. 19).

### 3.5 Course Materials

As noted in the previous chapter, course materials should be chosen to support the teaching strategies and to accommodate individual learning styles. Supplementary teaching materials should be developed for all courses, which include overheads, slides and/or videos of procedures related to the specific tasks of each target group, performance checklists which detail the actual procedures to be used in all tasks, and mock-ups for practice of skills, particularly for worker training. (Mock-ups may also be appropriate for contractor training, as the best manner in which to learn LBPA/risk reduction work is through actually doing the steps.) The course materials should also include all of the safety equipment and tools and materials used to do the abatement work. Actual respirators, coveralls, mock-ups, inspection tools, etc. should be available for practice sessions and for participants to handle and become familiar with.

#### 3.5.1 Student Manual

As indicated under the review of the Aulson course, some of the information from that course could be transferred directly into a Canadian student manual. However, considerable effort will be required to

produce the remaining chapters, particularly those concerning the regulatory environment in Canada, namely hazardous waste procedures, Occupational Health and Safety (OHS) requirements and the abatement procedures. Separate chapters or addenda may have to be written for each province, as regulations vary from province to province.

Developing the actual operations for the abatement procedures will be challenging as the body of written knowledge, research and specifications relating to LBPA/risk reduction work is limited. Unlike energy conservation research in Canada, where much effort was expended to develop air leakage control and insulation techniques, the Team is aware of only a few LBPA/risk reduction research projects underway (such as the HUD demonstration projects). The time-saving techniques and procedures that come with experience will need to be determined and then course materials which accurately describe these, can be written.

The student text should be comprehensive and stand-alone (i.e., it should contain all of the content presented in each of the courses, all illustrations, performance checklists, tests and review questions). It should have a table of contents, glossary and index. It should be written at a Grade 8 reading comprehension level to reflect the average reading capability of the general public.

It is recommended that one comprehensive student text be produced for use in all courses. There will be content common to all of the courses proposed, but each of the target groups will use the information in different ways for different purposes. Therefore, there will be some commonalities in the student textbook, but there will also be sections of the textbook that are distinct to each of the target groups. Further, many of the teaching materials will be used in all courses, while some will be specific to only one of the courses.

#### 3.5.2 Instructor Manual

A separate instructor manual for each course needs to be developed that reflects the different target audiences and objectives of each course. Differences will appear in the teaching approaches used, learning activities and emphasis. Each instructor manual

should include information on adult education principles, teaching strategies, comprehensive lesson plans, evaluation instruments complete with the answers. Hard copies of all overheads and lists of course materials and tools required for the course should be included. The manual should be organized to coincide with the set-up of the student manual.

An administrative guide listing all the physical requirements of the course (i.e., size of room, tools, materials, etc.) should be included.

### 3.6 Course Content

The course content will reflect the objectives and standards of performance for each course. The standards of performance for each target group must be developed prior to preparing the instructor materials and also before the development of the student manual, in order to ensure the content and form is consistent with the various standards of performance and evaluation methods. While the content may be the same from course to course, the manner in which the target group learns it will be different. For example, the worker will know how *to do* the abatement procedures, while the contractor need only know *what* the abatement procedures are and be able to supervise these. The difference will be in how the content is presented and the standards of performance for each target group in relation to that content.

Therefore, it is necessary to develop both the student manual and the instructor manual prior to implementing any training program to ensure that the course content and the teaching methods match the standards of performance and evaluation methods.

### 3.7 Consumer Seminar

#### 3.7.1 Target Audience

An information seminar will meet the learning requirements of other target audiences, including consumers, architects, real estate agents, landlords and contractors who do not intend to enter the LBPA industry, but who will need to plan this work into their jobs.

#### 3.7.2 Purpose

The purpose of the seminar will be to provide sufficient information to the participants to enable them to assess the potential for a LBP problem in any house they are dealing with and to provide them with options for possible follow-up action. The seminar will not train people to do the work themselves, but will lead them to one of three conclusions:

1. that the building in question doesn't pose a risk;
2. that "*in-place management*" measures are workable and will reduce risk of exposure to LBP dust;
3. that they should hire a specialist to abate LBP.

If a homeowner wishes to do the work, it will be recommended that he/she take the LBPA worker training course prior to doing any work.

#### 3.7.3 Seminar Outline

The seminar will be three to four hours in length. It will follow a lecture format supplemented by overheads and other visuals, either slides or video. Samples of the safety equipment and tools and materials used to do the LBPA/risk reduction work should be on display.

An outline for the seminar is included in Appendix 7.

#### 3.7.4 Teaching Materials

A participant manual that is very visually oriented and which follows the headings listed in the seminar outline should be prepared. This manual would be much more limited in scope than the training course student manual, but should contain sufficient information to enable the homeowner to make a decision about risk levels. An inspection form similar to CMHC's Homeowners & Homebuyers Inspection Checklist for Maintenance & Repair would be a useful addition as an appendix to the manual.

As indicated previously, the seminar should be highly visual in nature, using audiovisual materials such as slides, overheads and videotapes. It is anticipated that the materials developed for LBPA/risk reduction training courses could be used in the consumer seminar.

Names and addresses of local businesses involved in lead testing, abatement work and hazardous waste disposal should be provided as a handout.

A facilitator's guide should be developed to aid in delivery of the seminar.

### 3.8 Resolution of Key Technical Issues that Affect the Training Courses

There are several key technical issues that need to be resolved or positions developed as part of the training course design work. Clearly, LBPA/risk reduction is an evolving field and training material will be in a constant state of change. The issues outlined below represent the minimum that should be resolved to some degree as part of the design process.

Note that the Team is not suggesting that CMHC nor any one government department take responsibility for this task. (Perhaps a conference of interested parties on the subject is an appropriate forum to devise an interim position on these items.) This section is simply an attempt to outline that work that should be done, regardless of who does it, so that the training materials are reasonably clear.

#### 3.8.1 Lead Standards to be Followed in Canada

The training course must provide guidance on air and dust levels to be followed, safe blood lead levels and OHS requirements for removals from the job site when blood lead levels are exceeded. This is well established in many US states, but this is not the case in Canada. These standards will have to be defined for the course.

HWC published the Exposure Guidelines for Residential Indoor Air Quality in 1987. This is one of the few indoor residential environment standards in Canada. With respect to lead, the document states

that "*lead can produce toxic effects in the body*" but "*there is uncertainty in determining total exposure to airborne lead because of indirect exposure to lead of airborne origin that has settled as dust. Therefore it is not possible to derive an acceptable air lead level for the indoor environment*". (p. 34). The document does not give a lead dust guideline.

Hilcon Consultants (under contract to CMHC) notes that Health and Welfare Canada's (HWC) Lead Working Group has prepared an Update of Evidence for Low Level Effects of Lead and Proposed Blood Lead Intervention Levels and Strategies (p. 29, Hilcon).

No information is provided on this document but when it is eventually released, we hope that it provides guidance on the worker exposure levels needed for the Work Safely section and will be useful in explaining the hazard in the first section of the courses.

Alternatively, US standards should be adopted as interim working guidelines.

#### 3.8.2 Use of Paint Stripping Techniques

Reducing Risk in Paint Stripping, the Proceedings of an International Conference (Feb, 1991), sponsored by US EPA suggests that methylene chloride is one of the most effective paint strippers, but is a carcinogen. However, the document also suggests that there is much research going on that will hopefully produce effective alternatives to methylene chloride that are less hazardous. The training material needs to reflect the risks of using methylene chloride and should be updated constantly to reflect the latest research.

The Team also suggests that chemical stripping as a LBPA method should be downplayed in the training, as the research shows that there are hazards. The practice in the US is to restrict its use to use on trim and mouldings in historic buildings where removal and replacement, encapsulation and off-site dipping are not possible.

### 3.8.3 Use of Test Kits for LBP Detection

Lead in Paint can be detected in three ways - a lab test, XRF and consumer test kits. The consumer test kit is the least accurate of the three ways available. Given that at least 100 surfaces have to be tested, lab tests are impractical. XRF machines are expensive (at least \$10,000) and cannot be used on curved surfaces. Inspectors will not invest in XRF machines unless the business is available.

This leaves using consumer test kits. A recent US Consumer Product Safety Commission study of four test kits shows that three of the kits *"may be useful for lead paint screening by consumers (Memo to the Commission from Brian C. Lee (Jan 22, 1992))"*. One of the kits tested was the Frandon kit that is now widely available in Canada.

The Team proposes that use of these test kits be included in the course material until a decision is taken on whether the results of these kits are adequate to make a decision on deleading.

### 3.8.4 The Need to Determine the Best LBPA Techniques to be Followed

In an emerging field such as this, the techniques will change over the years. Further, unlike air leakage control where much time and money was spent in developing the best methods, we do not see governments spending the same levels of research dollars on LBPA/risk reduction techniques.

The Team has found in its research that the work practices in Massachusetts and Maryland are probably the most advanced in the USA. The Canadian government may wish to base the technical aspects of the training on the LBPA/risk reduction work practices adopted in these states. The OHS requirements would be based upon the prevailing Canadian legislation and regulations. American OHS requirements could be used where no Canadian requirements exist.

The ASTM Committee E06.23.30 (Work Group on LBP) has developed a series of draft ASTM standard guides for testing the performance of LBP encapsulation products (discussed in an April 20, 1992 memo from the committee). These guides,

once approved, should be referenced in the course material. To our knowledge, ASTM is one of the few established organisations that is dealing with the LBP issue.

The LBP Abatement Training Sub-committee chaired by CMHC provides a forum for discussing the best methods for abatement. The course material would need to be updated annually to reflect the new knowledge. Participants in past courses could have access to this materials for a fee.

### 3.8.5 Impact of Existing Canadian Lead Standards on the Training Courses

Hilcon has done a summary of the relevant standards for lead in the environment (Tables 3.1 and 3.2). The Team has cited the standards that could have an effect on the training program design. Readers should note that we have assumed that the standards have been cited correctly and no attempt has been made to verify these standards.

In Table 3.1, Hilcon suggests that Consumer and Corporate Affairs Canada still permits .5% w/w of lead in paints and liquid coatings for interior use as of November, 1988. The Canadian Painting and Coating Association (CPCA) has had a voluntary ban on lead-based consumer paint for interior and exterior use since 1991 (Review of the Use of Lead Compounds in Consumer Paints (October 29, 1991)). While this ban will affect most paints sold, there still could be some exterior grade consumer paint (sold by manufacturers not following the ban) on the market that has levels within the detection limits of screening tests like Frandon. Thus LBPA/risk reduction activities could still be needed in relatively new houses, as well as old (pre-1960) houses.

Also, according to the regulations cited in Hilcon, lead is still permissible in children's toys and furniture (.5%w/w) and glazed ceramics (7 ppm).

The course material needs to reflect this information.

### 3.8.6 Impact of Existing Waste Disposal Regulations on the Training Courses

Hilcon (in Table 3.2) suggests that Alberta, BC, Manitoba, Newfoundland, Ontario, Quebec and Saskatchewan have regulations that restrict lead leachate in solid waste disposal facilities and surface water. This suggests that the training course will need to cover these regulations on the safe, legal disposal of construction debris containing LBP.

In the US, contractors have to separate used suits and plastic sheeting (containing low levels of lead) from window frames (containing levels of lead that exceed hazardous waste level guidelines). The former can be treated as construction debris, whereas the latter has to be handled and disposed of in a more expensive manner (i.e., as hazardous waste) because such materials will likely fail the Toxic Contaminants Leaching Procedure.

At this point, we understand that all LBPA waste in the US has to be tested for leachability and handled either as construction debris or as hazardous waste.

This issue will have to be resolved by Federal/Provincial co-operation, perhaps through the staff committees of the Canadian Council of Resource and Environment Ministers.

It is interesting to note that at least in Ontario, contractors have to follow Regulation 309 (the lead waste regulation) but homeowners do not. The major implication for this issue relates to the consumer seminar. Unlike Massachusetts, homeowners are permitted to do their own LBPA. Thus, the seminar should reflect that, at least in Ontario, do-it-yourselfer projects to abate lead do not require any legal consideration when managing waste.

Two other points should be made on this issue. First, despite its legality, disposing of such waste should be discouraged to protect the environment. Metro Toronto offers a free waste pickup service. Such services should be stressed in the seminar. Second, the presentation of this material has to be done carefully because homeowners and contractors who take the seminar will use this knowledge to circumvent the expensive waste disposal requirements.

(Note: This material on Ontario was taken from Regulatory Requirements - Waste Disposal Gore and Storrie (April, 1992)).

### 3.8.7 Research on "In-Place Management" to Reduce Risk Against LBP

HWC, in its 1987 Exposure Guidelines for Residential Indoor Air Quality, states that *"Although lead is introduced into the domestic environment as an airborne pollutant, the major pathway for exposure is through ingestion of dust once it has settled"*. (p. 33). The document recommends that *"surfaces which may be contaminated be cleaned frequently and that a high standard of overall cleanliness be maintained"* (p. 42).

While acknowledging the hazard, the HWC document did not give any guidance on the approach to be taken to reduce risk of exposure to lead. Even with an infusion of funds to help homeowners to abate LBP (and this is not likely to happen), it will take years to deal with the problem. Of particular importance is whether the risk of exposure to LBP can be reduced without the expense of abatement.

These have been called *"in-place management"* measures by HUD. HUD has only recently published a draft technical document on this topic (cited previously in this report). Research may have to be done to test the effectiveness of the measures in Canada. Such research is important and a legitimate endeavour because if *"in-place management"* works and does not pose a threat to the homeowner doing the work, it will represent a positive interim step until funds are available to abate LBP.

*"In-place management"* is common practice in asbestos. Sections 5, 7, 8, 15 and 16 of the Ontario Regulation 654/85 spell out what an owner must do to maintain asbestos in place. Asbestos must be abated however, if the asbestos is disturbed due to renovation or demolition. In the absence of "Massachusetts-style" regulation, we believe that this will be the model followed for LBP in Canada. That is, abatement will only occur when the hazard is too great or when renovation is contemplated.

### **3.8.8 Conclusions on the Resolution of the Technical Issues**

The Team recognises that many of these technical questions are being researched by CMHC. However, they must be answered to some degree before a course can be designed. There may be other questions needing resolution. Again, the Team stresses that these questions should be resolved or interim positions developed as part of any training design work. The Team also stresses that the onus does not fall to CMHC alone. A collective approach with other government departments and other interested parties is in order.

## 4. IMPLEMENTATION STRATEGY

---

### 4.1 Factors Affecting the Uptake of LBPA Training

Despite the documented hazard of LBP and the projected 15% growth rate for LBPA/risk reduction services by Rifkin-Wernick Associates (cited in Lead Detection and Abatement Report, March 1992), there is no evidence that similar growth will occur in Canada at this time. Since the potential growth of LBPA/risk reduction will affect the implementation of a training strategy, the Team has done some preliminary work on how the LBPA hazard might evolve and has based its implementation strategy on the conclusions of this work.

#### 4.1.1 Comparison of LBP to other Indoor Environment Hazards

Since LBP is a new hazard (at least in the public's mind), it is useful to compare the hazard of LBP to other hazards such as asbestos, Urea Formeldhyde Foam Insulation (UFFI) and radon to see what the driving factors were in controlling these hazards.

Asbestos: In the case of asbestos, the problem in this country is largely found in commercial and institutional buildings. Although many homes contain asbestos in piping, flooring and other locations, it is not seen as a major hazard and our information is that less than 5% of revenues for abatement firms are generated by residential abatement projects. Most provinces have some sort of regulation on asbestos, but other than Ontario, the regulations do not cover the detailed work procedures and do not cite training requirements. It is left to the market to develop training procedures and abatement techniques to meet the regulation.

In Manitoba, asbestos is recognised as a carcinogen and is treated as a controlled product under occupational health regulations. The regulations place the onus on employers to ensure that their employees (such as renovation contractors) are not be exposed to the product. Recently, a directive on asbestos was released in Manitoba. It states that abatement must be done using approved containment techniques and waste must be handled properly.

This directive can be considered as a performance standard, as it requires asbestos be abated in a safe manner, but it does not describe or approve the techniques required for abatement. It is important to note that there is no requirement to abate, but if asbestos will be disturbed, it must be abated or managed in place. There is a provision in the regulation that any asbestos must be abated or managed in place if it poses a health hazard to workers.

In Manitoba, no one needs a license or training to remove asbestos. The motivation for contractors to take training is that worker exposure must be controlled under the above regulations and training is often a condition in the specifications before a contractor can bid on abatement work. Thus there is some motivation for contractor training.

In Ontario, asbestos is a designated substance and similar requirements exist in that province. Ontario's regulation 654/85 is probably the most comprehensive and was enacted as a result of a Royal Commission on Asbestos. Most provinces with asbestos regulations have adapted Ontario's regulation for their own purposes. The regulation describes the need to limit exposures, etc. and defines training requirements, but there is no approved training course and the detailed abatement procedures are not approved. Rather, it is left to the market to respond to the requirements of the regulation.

Since there is no national or provincial standard on abatement procedures or training requirements, Pinchin Associates, a consulting company with a national presence in asbestos abatement, went to each provincial department responsible for worker safety to get the department's approval or blessing on their procedures. According to Pinchin, these procedures are now used by others across the country. Pinchin has developed a three day course in abatement that is offered nationally. Use of the Pinchin course as the "defacto" standard was confirmed by an official in Public Works Canada (PWC). The Manitoba local of the painters union also offers an asbestos course for its members. Neither of these courses is formally recognised or approved by the Manitoba government.

Our understanding is that only 25-30 persons are actively removing asbestos in Manitoba.

The asbestos abatement business would appear to be driven by the regulatory environment that has been in place for at least 15 years. Since asbestos has been a recognised hazard for some time, abatement is also driven financially, in that checking for asbestos is often now a condition in an offer to purchase for commercial buildings, such as shopping malls. Prospective purchasers do not want to purchase properties containing asbestos or any other hazardous material. Thus, checking for asbestos is often part of an overall inspection for hazardous products.

One of the differences between asbestos and LBP is that LBP is found in virtually all homes, whereas asbestos is probably found in a minority of homes. If the problem is everywhere, then its impact on the market may be minimal because all houses will be affected to some degree.

Since asbestos is more of a recognized problem in commercial, multi-family and institutional properties, owners of these properties are likely more aware of the hazard and face liabilities from tenants and workers that a homeowner facing exposure in his or her own house, would not face. The Manitoba asbestos regulation does not apply to residences, unless there is an employer/employee relationship in the renovation (i.e., a contractor involved must protect his employees doing renovation work). These facts, along with the regulations, is probably driving asbestos abatement efforts. LBP is a problem in commercial buildings, apartments and public housing, but there is no incentive to abate, as there is no regulatory requirement to manage in-place or abate LBP in Canada. The hazard is not widely recognised by tenants and LBP is probably found in most non-residential properties. Thus a tenant or a prospective purchaser of an apartment block is likely faced with LBP, no matter what building is leased or purchased.

UFFI: UFFI is a spray-on insulation material that was installed in many homes in the late 1970's. In the early 1980's, it was alleged that formeldhyde was off-gassing and entering the homes. The Federal government offered a grant to subsidise the removal of UFFI. After much research and testing of homes,

it was never determined whether or not the symptoms presented by UFFI homeowners was due to formeldhyde or microbiological contamination growing in the voids that resulted when the UFFI was improperly installed. In a recent decision on a lawsuit by UFFI homeowners, the Quebec courts found that the symptoms presented by the UFFI homeowners could be due to a wide range of indoor contaminants. Despite this finding and the fact that UFFI removal is rarely done these days, a UFFI exclusion clause is still standard in most residential offers to purchase. CMHC and local real estate boards have recently encouraged removal of this clause in offers to purchase, we expect that use of this exclusion clause will decline.

Like asbestos, UFFI is found in a minority of homes. Thus up until the recent changes in the status of the hazards of UFFI, the real estate market has recognised a difference in price between UFFI and non-UFFI homes. Banks in particular, were concerned about lending values, and were ordering an inspection before a mortgage was given if there was any doubt about the presence of UFFI (such as in the case of an estate sale). It is unclear at this point whether the court decision referred to above will change the behaviour of the market. What is clear is that government grants to encourage removal fostered awareness of the hazard, stimulated UFFI removal and therefore, created a demand for contractor training.

Radon: Radon, like LBP, is a hazard facing many homeowners across the country. Unlike LBP, radon cannot be seen and occurs naturally - it's God's radon - some say. As a result, radon is perceived by many as a natural hazard over which there is little control. In Appin's experience and the experience of other consultants in Manitoba (one of the few places in Canada where background levels of radon are a problem), is that radon, even though it is a known carcinogen, is not perceived as a major hazard. Radon only became an issue after reports of concerns in the media. Dranjer Corp., a Winnipeg company that has developed a radon mitigation device, reports that the majority of sales are in the USA, not Canada, because radon is seen as a greater hazard in that country. A few purchasers will put a radon test in an offer to purchase on a house, but often the real estate agent will try to have the condition removed, rather than spending the \$50 to have a test done.

There are no provincial standards on radon. There is only the HWC standard, which is five times higher than the US EPA guideline.

While CMHC did fund some radon mitigation training contracts, the issue has not received the same attention as UFFI. In the case of radon, the level of public concern is much less, likely for the reasons described above.

#### 4.1.2 Impact of Energy Conservation Work on LBPA Uptake

Some provincial utilities notably BC Hydro, have launched Demand-Side Management (DSM) programs to reduce energy demand and consumption. Such programs offer loans and grants to homeowners and business to retrofit their properties. Conservation activities (such as wall insulation) in older houses may disturb LBP. These utilities and agencies should be made aware of the LBP hazard.

#### 4.1.3 Conclusions on LBPA Uptake

A review of these three hazards show that in the absence of government regulation requiring abatement, or grants to encourage abatement, or great public concern for lead poisoning identified in health screening studies, LBP may not become a major concern in the minds of Canadians. Given that virtually every house has LBP, its effects on the real estate market in absence of regulations or incentives are questionable. Despite the release of the *Old Paint, Lead and Your Family's Health* leaflet, there have not been many stories in the press on LBP nor has Appin, for example, seen an increase in requests for lead tests, advice over the phone, inspection requests, etc. One problem with concluding anything from the effects of the leaflet is that it has not been fully distributed across the country. Perhaps what is needed is some research to determine the response to the issue once the leaflet is completely distributed.

Even though there has been a muted response by the public to the issue to date, there is no question that LBP is a hazard. The LBP issue became important in Canada largely because of one television program. Thus, the perception of the hazard could change dramatically if the profile on LBP changes (e.g., the

leaflet spurs interest, the economy improves and people decide to do more renovating, there are documented cases of poisonings or there are more stories on LBP in the media).

From the Federal government's perspective, any changes on the LBP issue may raise concerns in public housing and with recipients of CMHC renovation grants such as the Residential Repair Assistance Program (RRAP). CMHC's policy is to cover LBP testing and abatement work where RRAP-approved work will disturb LBP so long as the cost is within the maximum assistance available.

LBPA/risk reduction may also be an issue in premises managed by PWC and DND military properties.

Given the hundreds of millions of dollars being spent on DSM in Canada and the potential that this work will have on disturbing LBP, these loan/grant programs could have a major impact on the uptake of LBPA once the recipients realise that such work can disturb LBP, or that workers without proper training can be exposed to lead-based paint.

Therefore, while one could argue that spending money on courses is not necessary until the issue is more important in the public's mind, we suspect that there is already some demand to have trained contractors who can abate LBP. We also suspect that some homeowners will want to come to the seminar to learn more about LBP. If courses and trained individuals are not available in the major cities, one runs the risk of incorrect work being done.

In the Team's opinion, the issue calls for a measured response by government. That measured response is to ensure that properly designed training is available to contractors and that consumers are aware that they can do something to reduce risk of exposure to LBP.

The Team has therefore outlined three options to implement the training strategy, which consists of preparing the training materials and delivering the courses.

## 4.2 Preparation of the Training Materials

There are three options for preparing the training materials.

Option 1 - Do Nothing: The government could do nothing and rely on private consulting firms to design and deliver the training (like asbestos).

Option 2 - Review Courses Now Being Offered: Members of the Training Sub-committee could review private courses with the intent of giving some sort of approval to the material.

Option 3 - Fund Preparation of Course Materials: CMHC or another department could, with appropriate input from other government departments and industry, take responsibility for preparing a student text, instructor guide and audiovisual materials to be used across Canada.

### 4.2.1 Discussion of Training Material Preparation Options

The Team suggests that doing nothing is not an option. While no research has been done to determine the level of concern that Canadians have and the response to the pamphlets has not yet resulted in a groundswell of concern over the issue, LBP is a documented hazard that will require attention. In these tight fiscal times, many Canadians would not expect a UFFI-type grant to be available for LBPA. Many, however, would expect some response from government and encouraging training of contractors and consumers is a measured, reasonable response by government to the issue.

At minimum, the Team suggests that some mechanism for reviewing courses be considered so that some level of quality control be maintained. The review process does not have to be mandatory, and it is likely that many training providers would like to have their courses reviewed as it would give them a market edge. We note that even in Massachusetts, training providers have to be licensed (at a cost of \$1,000 per year) and have their materials approved by the State before the course can be offered. All that is needed under this option is a process for evaluating course content and delivery methods.

The Team also suggests several reasons for some level of public sector involvement in the preparation of the student manual, the three instructor manuals and the teaching materials.

1. The market approach works effectively in the USA with private companies developing and delivering courses because standards exist upon which they can base the courses. There are also standards that help drive the LBPA/risk reduction market, which in turn, encourage training providers to invest the time to develop the course material. In Canada, while the Hilcon report suggests that there are lead standards for soil and water in some jurisdictions, there are no LBP abatement standards. Since no LBP abatement standards exist, problems will develop in the industry with inferior work and incorrect techniques being applied. Consistency in training is best achieved by having the training materials developed by one central agency.
2. If abatement begins to occur in public sector buildings (be it public housing, DND or PWC properties), the government could require attendance at such courses as a condition of bidding. Having a course that is acceptable to these departments simplifies the bidding process and ensures some level of quality control.
3. While the "*do nothing*" option for training materials provision is less expensive, and is the option followed in many states in the USA, the history in Canada is for government to participate in training course design and delivery. Public involvement in the R-2000 training program, HRAI courses, the EMR courses and various courses offered by CMHC have provided a consistent, high quality product that has been offered across the country. Such public sector involvement avoids duplication of effort. Participation also demonstrates leadership on this emerging, critical issue.
4. The private market will develop courses for that material that is of interest to contractors. It is unlikely therefore, that "*in-place management*" risk reduction methods would be covered because contractors would have no interest in and would make no money explaining such techniques to homeowners.

They might be willing to explain such techniques as part of an abatement strategy and pass out a government leaflet, but this would likely be the extent of their interest. Courses developed with public funds that stress the benefits of these techniques to contractors, inspectors and consumers will help to promote them.

5. If a private market strategy is followed, then it is likely that only training providers in Ontario, Quebec or BC might see enough of a market to design and deliver courses. Other smaller provinces could be left without training.

Developing the course with public funds allows the government to offer the course to industry associations or community colleges who are willing and able to deliver the course in all parts of Canada.

Based on the foregoing, the Team suggests that Options 2 (review existing courses) and 3 (develop courses with public funds) be followed.

Assuming that government will want to participate and help fund the design of LBPA/risk reduction training materials, the next section outlines options for delivering the training program.

#### 4.3 Industry Training Delivery Strategy

The Team has outlined three options for delivering the training - private sector delivery, a partnership of public, industry and community colleges or total public sector involvement and control.

##### 4.3.1 Option 1: Private Sector Delivery

Under this option, the government would simply make the training materials available to those who wish to deliver LBPA/risk reduction courses. Government becomes a repository for the course materials.

This option requires little cost and involvement of the government. However there would be no control over quality of training and unless stipulated, there would be no public record of who has received training.

##### 4.3.2 Option 2: A Partnership Delivery

This option involves the delivery of the course material through an initial partnership of relevant industry associations (e.g., CHBA, SAWDAC, NECA and local organisations like the Manitoba Renovation Contractors Association) and government. If demand for LBPA/risk reduction increases, we see that eventually the community colleges will be an important player in the design and delivery of the courses. Many community colleges now have a mandate to earn revenue and our experience with colleges across the country suggests that if course fees can be earned, the colleges will want to offer the program. This is especially true if the material is readily available and has been properly designed based on adult education principles, because of the avoided cost of course development and consistency in programs in all colleges.

###### 4.3.2.1 Working With Industry

Under this option, the government would supply the originals or sell the training courses and have one or more industry associations co-ordinate delivery using their established infrastructure. The government would provide at least one Train the Trainer course across Canada, ensuring an initial pool of instructors qualified to deliver the training.

Train the Trainer courses would be designed following the competency based training model described in Section 3. Trainers must be familiar with adult education principles and be skilled facilitators who are able to use the variety of teaching strategies required in both knowledge-based and skills-based courses. Therefore, the Train the Trainer courses must include both technical training and training in appropriate teaching methods. There are many instructors who have already been trained in adult education principles and facilitation techniques. They would only require the technical training related to LBPA/risk reduction work.

The government would set up quality control standards and the industry associations would be responsible for ensuring that these standards are met.

This approach has many advantages. It takes advantage of established delivery systems set up by industry associations (e.g., CHBA). It is an added benefit for associations to offer to their members. Many associations are already familiar with funding programs available to business and industry for employee training. These associations track who has taken the courses and offer certification that is recognized by the industry. It is a revenue source for the association. The government gets the training out at little cost to itself.

The Team pointed out in an earlier section that carpenters, painters, window and door and siding installers, general renovation contractors and asbestos removal contractors will all have an interest in taking the training.

The industry associations representing these contractors will also want to offer the training if they see a business opportunity and benefits to their members.

We do not expect that there will be a separate association for LBPA. Nor do we expect that only one association will want to be totally responsible for delivering the training.

The Sub-committee may therefore want to hold discussions with several associations cited above to form an LBPA Training Council. The Council would co-ordinate the delivery of the training course material, would accredit instructors and would keep a record of persons trained. It might publish a course schedule. The intent is not to set up yet another association. Rather, this organisation would have a specific mandate - to ensure that Council members deliver the training. Only associations would belong to the Council. This avoids the problem of membership "turf wars" that we have seen in the past.

Alternatively, the government could negotiate separate agreements with each association to deliver the training. This perhaps is a better approach as it does not involve the establishment of any organisational structure.

Some people have compared industry involvement in LBPA to the CHBA involvement in the R-2000 program. It is important to point out that this

comparison is not appropriate because the control mechanisms in the R-2000 program would not exist in the LBPA/risk reduction options outlined in our report. For example, R-2000 requires that a HOT-2000 computer program analysis and a plan examination be done to ensure that the home meets program requirements. This would be like having a lead inspection report generated. New builders must have blower door tests done on the first few houses built to verify the integrity of the air/vapour barrier. This would be akin to a lead dust test at job closeout. Neither of these requirements would be mandatory under this proposed strategy.

#### 4.3.2.2 Working With Community Colleges

The Team's experience shows that Canada's community colleges are willing partners in offering training to the renovation industry. Institutions are looking for business.

The government could provide materials to the *Quality Plus* centres already established and would train instructors in interested community colleges. Course material could be offered as a specialization, through Continuing Education departments, or incorporated into existing training courses. For example, if carpentry or painting trade apprentices are already learning WHMIS and use of safety equipment, it would be a simple matter to incorporate the equipment and work practices used for LBPA/risk reduction work. Community colleges would then be responsible for ongoing delivery. The government would train the college instructors, and/or provide a list of trainers in their area who have been trained and who could be hired on contract basis to provide courses for the college.

Community college involvement has the added benefit of training new workers coming into the industry. The colleges (e.g., the Assiniboine Community College in Brandon, MB or Holland College in PEI) will train those existing workers in communities where the industry association may not be capable of course delivery.

The Team has included sample letters to industry associations, community colleges, trainers and housing agencies to determine their interest on the subject in Appendix 8.

#### 4.3.3 Option 3: Public Sector Delivery

Under this option, there would be a greater presence by CMHC and other government departments to deliver an LBPA/risk reduction program across Canada similar to states such as Massachusetts. Since such a program is not likely, we have not provided any details on this option.

However, we suggest that a public sector strategy will be needed because the federal and provincial governments own substantial numbers of housing and other buildings in Canada. We suspect that there will be an initial demand for LBPA contractors for deleading work in public housing. Deleading will also likely be done on Department of National Defence properties, Indian Reserves and other Crown properties. Deleading could also be funded under the RRAP if the conditions previously outlined are met. Since much of this work is contracted out, the training could be delivered under Option 2.

#### 4.4 Consumer Seminar Implementation Strategy

The seminar will be aimed at the various players in the housing industry, including builders, renovators, suppliers, tradespeople, architects, electrical and plumbing contractors, as well as individuals employed in related industries, such as real estate and retail sales. The general public (especially those planning renovations) will also be targeted.

Wherever possible, the seminar should be promoted as part of existing seminar delivery infrastructures. For example, it could be one of the workshops available at industry association annual meetings and conferences, or could be promoted through existing industry association channels, such as their newsletters, etc. It could be the topic of an afternoon or evening meeting of professional associations, such as architects and real estate agents. The seminar could also be presented to relevant Trade Advisory Boards to initiate discussions regarding integrating the LBPA program into existing curricula as appropriate.

Seminars open to the public can be offered with renovation and home shows or with the local Consumers Association. Seminars aimed at the public could be promoted through newsletters of non-housing related associations, ratepayer associations in older areas of cities and towns, environmental organizations and family-oriented publications.

Seminars could be delivered by a number of individuals: trainers who deliver the industry training programs, CMHC field personnel and community college Continuing Education programs. Again, the level of involvement by the government in ensuring that these seminars are available to the public will dictate the level of organizational work and infrastructure required. Trainers could organize and deliver the seminars using either Options 1 or 2 outlined above. The government could contract the delivery of the seminars to a consulting company or deliver in partnership with an industry association.

CMHC, for example, could also organize and deliver the seminars through its field offices similar to other workshops offered at this level.

In all cases, participants would be expected to pay a fee for the seminar.

## 5. CONCLUSIONS AND RECOMMENDATIONS

---

This section of the report provides the Project Team's conclusions and recommendations.

### 5.1 Conclusions and Recommendations from Section 2

The Team reviewed two courses. One was Leadtec Services, Inc. (LSI), Baltimore, MD HUD Guidelines course and the other was the Aulson Company, Inc., 5 day Inspecting and Abating LBP course in Boston, MA. Both courses had weaknesses (i.e., they did not teach abatement skills and were not targeted to specific audiences), but some of the material could be adapted for use in Canada.

### 5.2 Conclusions and Recommendations from Section 3

The Team outlined a series of assumptions that will help guide the course design. The most important of which is that knowledge of risk reduction techniques as well as abatement techniques need to be built into the courses. These techniques include risk reduction for construction workers, such as painters and carpenters doing renovation work, techniques (called "*in-place management*" techniques) for homeowners who cannot presently afford to abate LBP and techniques for contractors and others who wish to abate LBP on a priority basis in the home.

The Team defined four job categories, namely; 1. Site Preparation, 2. Window Removal and Carpentry work, 3. Painting and 4. Site Cleanup that could be done by specialists. The Team proposes to use a competency-based training model to teach LBPA job skills. Such methods are used throughout North America to teach job skills to adult learners.

Based on these assumptions, the Team recommends that:

- Competency-Based Training courses varying in length from two to five days, be developed for all three roles in the LBPA industry (i.e., inspector, contractor and worker);

- an instructor manual be developed for each of the courses developed;
- a comprehensive student manual that incorporates material from the USA courses as identified in Section 2, be developed for use by all potential players in the LBPA industry;
- teaching materials, including slides, overheads, videos and/or mock-ups be developed as appropriate for each of the courses.

The Team identified several technical issues requiring clarification so that guidance could be given to training course developers.

While we recommend that resolution of such issues is not a pre-requisite to commencement of course development, work should begin to resolve these questions so that courses can be updated when information comes available. Perhaps a conference of interested parties under the auspices of the Lead-Based Paint Abatement Training Sub-committee chaired by CMHC is the best way to prepare a set of interim positions that would guide the training work. The Team recommends that the Sub-committee be the forum for resolving technical issues identified in Section 3.

The most important research effort that needs to be undertaken is on "*in-place management*" methods to reduce risk. It is critical because even with a major infusion of funds to delead houses across Canada, it still could take years before the problem is dealt with. One therefore needs research to tell homeowners how to manage the problem until the funds (from whatever source) are found to abate LBP.

Since the Team believes that contractors might be willing to incorporate "*in-place management*" measures as part of an abatement strategy, a function on teaching contractors how to explain these techniques to homeowners has been included in the course outlines.

We recognize that contractors will want to focus on renovation work and we believe that many contractors will provide information on "*in-place management*" if such publications are available. But they will be reluctant to take responsibility for such advice because they have no control over the implementation and earn no revenue from giving the advice.

The Team also recommends that a 3 - 4 hour seminar be developed for homeowners and interested parties to learn about LBP. The seminar will not train people to do the work themselves, but will lead them to one of three conclusions:

1. that their home doesn't pose a risk;
2. that "*in-place management*" measures are workable and will reduce risk of exposure to LBP dust;
3. that they should hire a specialist to abate LBP.

### 5.3 Conclusions and Recommendations from Section 4

The information to date is that LBP has not become a major issue even with the partial distribution of the leaflets. The Team's analysis of asbestos, UFFI and radon suggests that the response may be muted without regulations or funds to help clean up the problem.

It is our view that in the absence of regulation, the asbestos experience is the model that will be followed. "*In-place management*" will be followed until the hazard is too great or renovation is contemplated. There will be those contractors who will offer LBPA/risk reduction services, but many will turn to a LBPA specialist, as they would for asbestos abatement. The person or company would abate the lead paint so the other workers (e.g., painters, carpenters, electricians) can do their jobs without risk of exposure to LBP.

We suggest that the Demand-Side Management (DSM) activities of provincial utilities may disturb LBP in some cases (e.g., insulating walls) and this work may increase demand for LBPA training in Canada.

We recommend that a consumer survey be done after the leaflets are distributed to find out if the general public is concerned about the issue.

Regardless of the public response to date, we know that LBP is a hazard, its profile was raised largely through one television show and there are many public properties that could require deleading. The latest experience in the USA points to proper training to avoid exposure because of incorrect work.

These factors suggest that a measured response to the issue and one response is to sponsor the development of a training package that could be offered nationally. This is material development Option 3 - Fund Preparation of Course Materials.

Given that there is already course development happening in Canada, the Team also suggests Option 2- Review Courses Now Being Offered, which involves reviewing courses currently being offered in the marketplace with the intent of giving some sort of approval to the material, also be pursued.

The Team recommends that CMHC look seriously at delivery Option 2 - the Partnership Option. This involves:

- discussions with selected industry associations to co-ordinate course delivery to their members,
- discussions with community colleges for integration of LBPA with existing trades training and delivery of the training courses through continuing education programs.

The Team recommends that the consumer seminar be delivered to the various players in the housing industry, including builders, renovators, suppliers, tradespeople, architects, electrical and plumbing contractors, as well as individuals employed in related industries, such as real estate and retail sales. The general public (especially those who are contemplating renovation) will also be targeted. The Team has suggested a wide variety of venues to hold the seminar.

## APPENDICES

## **APPENDIX 1**

### **TECHNICAL DISCUSSION OF COURSE EVALUATION CRITERIA**

## 1. Course Objectives

A good training course makes explicit the objectives of the course and states exactly what each student must accomplish in order to satisfy these objectives. These course objectives and student learning objectives are further refined by developing student standards of performance; (i.e., what each student must know or demonstrate in order to determine that they have accomplished the learning objectives). The objectives and standards of performance are used to prepare evaluation tools, such as written tests, performance demonstrations, etc. The evaluation tools must link directly to the course objectives and student standards of performance; (i.e., the evaluation must measure what the student must learn during the course).

These objectives, standards of performance and evaluation criteria direct the development of the course content and are determined first, prior to any course content being written. This ensures that the knowledge and skills required by the course participants drive the development of the course, rather than existing manuals, textbooks, information pamphlets, etc. It also ensures that extraneous information is not included in the course.

One key factor in determining the objectives, etc. of the course is the target audience. For example, a course designed for a field worker should be skills oriented and provide sufficient time to practise all aspects of lead paint abatement work, including use of safety equipment. The course for the contractor should focus on planning the job and estimating the contract amount. The contractor needs to know all of the abatement procedures, but does not need to practise the skills required by a worker to do the abatement procedures (unless he intends to do the hands-on abatement work, or teach his crews if necessary).

The inspector, on the other hand, need not know all the aspects of LBPA/risk reduction work, but must know and be able to do the test and inspection procedures. The inspector should have practice in these two areas. The objectives of a particular course, therefore, will be derived from the role of the target audience.

## 2. Learner Evaluation Procedure

The learner evaluation procedure is taken directly from the objectives and standards of performance of the course. Once it is determined what the participant must learn, the evaluation criteria are determined. If the participant is to learn a particular physical procedure or skill, an evaluation mechanism that tests performance of the skill is developed. If the participant is to learn facts and figures, a written test (or orally administered version thereof) would be more appropriate. The evaluation mechanism and evaluation instrument itself, should be developed at the beginning of the course development process.

The purpose of the learner evaluation is to determine what the learner has achieved in relation to the standards of performance required by the course and what remains to be learned. The evaluation process must include practice and an assessment of performance with feedback provided to the learner so that the learner knows either that s/he has mastered the material and if not, what is left to learn. The evaluation process should be viewed as a learning tool where the feedback is used to improve performance rather than simply to pass or fail an individual.

There should be several opportunities for practice and evaluation throughout a course to check student understanding and to ensure that the participants are ready to move on to the next section or subject area.

## 3. Course Presentation Format

The course presentation format, or teaching strategies, should match the course objectives. Determining exactly what the participant needs to know and who the course is aimed at will provide direction on how the course should be taught. For example, if a worker must be able to perform abatement procedures correctly, the course must make provision for practice and evaluation of physical performance. However, a course designed for public housing officials would not require that they perform the abatement procedures, but rather that they know what these are. The teaching strategy would, therefore, be much different for this target audience, even though the written materials may be the same or similar. These differences in teaching strategies have an impact on the types of course materials that are required, the skill of the instructor and the length of the course.

Teaching strategies also depend somewhat on the target audience. The teaching strategies will be determined in part by such factors as education levels of the participants or the type of job they have (i.e., desk job or field job). Those individuals with a higher education level will be more accustomed to being in a formal learning environment and less threatened by this environment. They will have the experience and skills required to participate more successfully in a lecture presentation than would others who are not used to sitting in a desk and writing all day.

Teaching strategies should accommodate a variety of learning styles, that is, visual learners, auditory learners, experiential learners, etc. To accommodate, for example, an experiential learner, the instructor might have a group discussion or case study of a situation. For the visual learner, having slides, demonstrations and videos would be useful.

Teaching strategies should be based upon accepted adult education principles. Following these principles results in training programs that make allowance for participants' previous skills or experience, take into account their level of comfort in a classroom setting, provide feedback in a non-threatening manner and allow participation in the teaching-learning process.

A variety of teaching strategies helps to retain participant attention and stimulate interest in the content materials. It helps to make the course interesting by varying the tempo, having the participants move from their seats, interact with one another, etc.

#### 4. Course Materials and Content

Once it is determined what will be included in the training program and how it will be taught, instructional materials are then chosen and/or developed. An instructor manual contains all of the lesson plans and teaching approaches used in the course. This manual will outline all of the supporting audiovisual needs and itemize all of the key teaching/learning points. A student manual must also be provided. It contains all of the information that is presented at the course, written at a reading level that is appropriate for the target audience.

The course materials should reflect the course objectives and take into consideration the target audience. For example, if the objectives require that the participant demonstrate a particular skill or procedure, the course materials must include the materials and mock-ups to enable the participants to practice and to demonstrate these procedures.

As indicated earlier, people learn in different ways - through experience, by reading, by listening and visually. The course materials should try to account for these different learning styles by including videos, slides, illustrations, as well as written materials.

Many of the potential participants in trades-related courses will not have more than a Grade 8 to Grade 9 reading level, will not be used to sitting for an entire day (or more) and will not be used to taking notes and organizing them into a readily-accessible format. For this reason the student manual must contain all of the written information, procedures and all other pertinent information they must learn on the course. Any technical procedures should be accompanied by photographs, illustrations or technical drawings as appropriate. It must be organized in an easily accessible manner with an index to assist the student to quickly find information.

The course materials should not be of such great magnitude as to intimidate the learners. There have been cases where the large size of the manual has resulted in participants leaving a course because of feelings of inadequacy and *"not being able to handle all that reading"*. If the manual is large, it should not be handed out without an introduction and explanation of why it is so large and what it contains.

## **APPENDIX 2**

### **LSI 2 DAY HUD GUIDELINES COURSE OUTLINE**

TWO DAY COURSE  
COURSE OUTLINE

DAY 1

- I. Health Effects of Lead Poisoning
  - A. Children
  - B. Pregnant Women
  - C. Workers and other adults
- II. Sources of Lead Poisoning and Routes of Exposure
  - A. Lead Dust
  - B. Water
  - C. Ceramics
  - D. Food
  - E. Others
- III. Worker Protection
  - A. Engineering Controls
  - B. Worker Protection Gear and its use
  - C. Medical monitoring of the abatement worker
- IV. Containment of an Abatement Project
  - A. Materials
  - B. Procedures
- V. Abatement Methods
  - A. Replacement
  - B. Encapsulation
    - 1. Rigid encapsulants
    - 2. Flexible encapsulants
    - 3. Decision-making regarding appropriate materials

DAY 2

- I. Abatement Methods (cont.)
  - C. Paint removal
    - 1. chemical, mechanical and heat

- 2. problems and pitfalls
- II. Cleanup of an Abatement Project
  - A. Equipment & materials
  - B. Procedures
- III. Clearance Testing
  - A. Procedures and standards to determine if a property is safe for reoccupancy
- IV. Disposal
  - A. Hazardous Waste
    - 1. Solid and liquid
  - B. Non-hazardous waste
- V. Testing and Monitoring
  - A. Lead Paint
    - 1. X-ray fluorescence
    - 2. Paint chips (AAS)
    - 3. Chemical spot tests
- VI. Combining Abatement with Modernization or Rehab
  - A. The value of pilot projects in the planning process
  - B. Phasing the work to hold down costs
- IV. Maintenance and Lead-based Paint
  - A. When does maintenance become abatement?
  - B. Minimizing costs while protecting workers and residents
- V. Federal Regulations and Guidelines
  - A. Content and impact
  - B. Where do we go from here?

## **APPENDIX 3**

### **PENNSYLVANIA LEAD ABATEMENT PROGRAM**

# PRIORITIES

## Pennsylvania Lead Abatement Program

The Pennsylvania Lead Abatement Program will be providing funds to certain property owners for the abatement of lead paint hazards in residential housing. The maximum funds available for each dwelling unit will be \$8,000. Since complete abatement of a typical home containing lead-based paint on numerous interior and exterior surfaces may well exceed that amount, partial abatements may well be necessary.

When less than full abatement is occurring in a home, it will be extremely important to focus on the lead paint creating the greatest hazard, while minimizing other hazards to the greatest extent possible. Decisions on what abatement methods to use on which surfaces, therefore, become critical; decisions may often fall upon the contractor.

The following should be considered a listing of abatement priorities in their order of importance:

1. Chipping, peeling or flaking lead-based paint. This should be considered the highest priority. All chipping, peeling or flaking lead-based paint in the unit must be addressed!
2. Friction surfaces, subject to abrasion. All friction surfaces, such as window and door jambs, floors or other areas where lead-based paint may be abraded, will create significant amounts of lead dust. The potential is there even if they are painted over with non-lead-based paint. Friction surfaces must be addressed!
3. Chewable surfaces. Chewable surfaces painted with lead-based paint, such as window sills and various trim surfaces, present a considerable hazard to children who mouth such surfaces. Chewable surfaces must be addressed
4. Other, intact lead-painted surfaces. Intact surfaces which are not chewable, such as intact walls and ceilings, or intact cornices and fascia, would be considered the lowest priority. However, if funds are available, they should also be addressed.

Begin by estimating the cost of fully abating all chipping paint, either through replacement, encapsulation, or if necessary, paint removal. Then address friction surfaces, by costing out their abatement, such as the cost of replacement windows. If funds are exhausted before all of the first three categories are addressed, go back to the earlier categories and select less costly forms of abatement in order to free up funds for other categories. All lead paint on surfaces in the first three categories must be addressed in some fashion!

## **APPENDIX 4**

### **AULSON COMBINED CONTRACTOR/INSPECTOR TRAINING COURSE**

# Inspecting and Abating Lead-Based Paint

## DAY ONE

8:00 - 8:15            REGISTRATION

8:15 - 9:00           INTRODUCTION

- The Lead Inspector

9:05 - 10:15          HISTORY OF LEAD USE AND LEAD POISONING

- Sources of Lead in the Environment
- Preventing Lead Poisoning
- Federal and State Agencies

10:25 - 11:30        HEALTH EFFECTS OF LEAD EXPOSURE

- Major Routes of Entry
  - Gastrointestinal Absorption
  - Respiratory Absorption
- Target Organs and Systems
  - Central and Peripheral Nervous Systems
  - Kidneys
  - Blood
  - Reproductive System
- Screening for Lead
- Treatment of Lead Poisoning
  - Chelation

11:30 - 12:00        MEDICAL SURVEILLANCE PROGRAM

1:00 - 3:30           MASSACHUSETTS REGULATIONS

- DPH 105 CMR 460.000

3:30 - 4:30           THE LEAD INSPECTOR

- Ethical Considerations
- Handling Questions and Problem Situations

## DAY TWO

8:00 - 11:30

### THE INITIAL INSPECTION

- Methods of Testing for Lead in Paint
- The Lead Report
- Sampling Locations

11:30 - 11:45

### THE LEAD DETERMINATION

- Disclaimer

12:45 - 1:45

### COMPARING SODIUM SULFIDE AND THE XRF

1:55 - 3:30

### MASSACHUSETTS REGULATIONS

- Massachusetts 454 CMR 22.00

2:30 - 4:00

### LEAD PAINT ABATEMENT OPTIONS

- Removal
- Covering
- Replacement

## DAY THREE

8:00 - 9:00

### PERSONAL PROTECTIVE EQUIPMENT

- Disposable Clothing
- Eye Protection
- Gloves
- Decontamination
- Washing Facilities

9:10-11:00

### RESPIRATORY PROTECTION

- Types of Respirators
- Maintenance
- Cleaning and Storage

11:05 - 11:30

### EQUIPMENT AND TOOLS

- HEPA Vacuum

11:30 - 12:00

### VENTILATION

- DLI Policy Statement #2

1:00 - 4:30

### ABATEMENT ACTIVITIES

- Work Area Preparation
- Dry Scraping
- Clean-up Procedures

## DAY FOUR

8:00 - 8:30 SAFETY AND HEALTH CONSIDERTIONS

8:30 - 9:30 THE REINSPECTION

- Lead Dust Monitoring Protocol

9:40 - 10:45 FORMS AND REPORTS

10:45 - 11:30 FEDERAL REGULATIONS

- OSHA

12:30 - 1:30 PRE-BID ACTIVITIES

- Cost Estimation
- Contract Considerations

1:35 - 3:00 INSURANCE CONSIDERATIONS

3:00 - 4:30 REVIEW

## DAY FIVE

8:00 - 9:00 ... LEGAL LIABILITIES AND RIGHTS

- Tenant
- Building Owner
- Contractor
- Inspector

9:10 - 10:30 ... FEDERAL REGULATIONS

- Housing and Urban Development

10:40 - 12:00 ... EXAM

## **APPENDIX 5**

### **PRINCIPLES OF COMPETENCY-BASED TRAINING PROGRAMS**

## Basic Characteristics That Distinguish Between Competency Based and Traditional Training Programs

Characteristic	Competency-Based Programs	Traditional Programs
1. <i>WHAT</i> Students Learn	1. Are based <i>solely</i> on specific, precisely stated student outcomes (usually called competencies or tasks) that have been recently verified as being essential for successful employment in the occupation for which the student is being trained. These competencies are made available to all concerned and describe <i>exactly</i> what the student will be able to <i>do</i> upon completing the training program.	1. Are usually based on textbooks, reference material, course outlines or other sources removed from the occupation itself. Students rarely know <i>exactly</i> what they will learn in each successive part of the program. The program is usually built around chapters, units, blocks, and other segments that have little meaning within the occupation—instructors focus on “covering material.”
2. <i>HOW</i> Students Learn	2. Provide trainees with high quality, carefully designed, student-centered learning activities, media and materials designed to help them master each task. Materials are organized so that each individual trainee can stop, slow down, speed up or repeat instruction as needed to learn effectively. An integral part of this instruction is periodic feedback throughout the learning process with opportunities for trainees to correct their performance as they go.	2. Rely primarily on the instructor to personally deliver most of the instruction through live demonstrations, lectures, discussions and other instructor-centered learning activities. Students have little control over the pace of instruction. Usually, little periodic feedback on progress is given.
3. <i>WHEN</i> Students Proceed from Task to Task	3. Provide each trainee with enough time (within reason) to <i>fully</i> master one task before being allowed or forced to move on to the next.	3. Usually require a group of students to spend the same amount of time on each unit of instruction. The group then moves on to the next unit after a fixed amount of time which may be too soon or not soon enough for many individual trainees.
4. <i>IF</i> Students Learned Each Task	4. Require each individual trainee to perform each task to a high level of proficiency in a joblike setting before receiving credit for attaining each task. Performance is compared to a pre-set, fixed standard.	4. Rely heavily on paper and pencil tests and each student's performance is usually compared to the group norm. Students are allowed (and usually forced) to move on to the next unit after only marginally mastering or even “failing” the current unit.

Source: Blank, p. 5.

# **DELEADING CONTRACTOR/INSPECTOR/WORKER TRAINING COURSE**

## **COMBINED COURSE OUTLINE**

### **A: APPRECIATE LEAD HAZARD AND NEED FOR DELEADING (1 hour)**

- A.1 Describe Health Effects of Lead
- A.2 Describe Groups at Risk from Lead Poisoning
- A.3 Explain Sources of Lead in the Environment and Potential Exposure to Lead
- A.4 Describe Standards for Lead Poisoning
- A.5 Identify Federal, Provincial and Local Regulations that Govern Deleading Operations

### **B: USE TEST EQUIPMENT AND EXPLAIN TEST RESULTS (3 hours)**

- B.1 Describe Lead Test Methods
- B.2 Use XRF machines (both types)
- B.3 Use Sodium Sulphide
- B.4 Use Frandon Test Paint Kit
- B.5 Collect Samples for Lab AAS Test
- B.6 Collect Samples for Soil Test
- B.7 Collect Samples for Water Test
- B.8 Use Frandon Lead in Water Kit
- B.9 Explain Test Results for All Tests

### **C: DO A LEAD INSPECTION (6.5 hours)**

- C.1 Identify Interior and Exterior Surfaces to be Tested and Abated
- C.2 Prepare and Present a Lead Inspection Report
- C.3 Explain Inspector's Professional Liability Exposure
- C.4 Interpret Deleading Report Findings

*Note: Included is an additional 4 hours of practice time for this function.*

### **D: DEVELOP AND COST A DELEADING STRATEGY (3 hours)**

- D.1 Describe The Three Basic Abatement Strategy Methods
- D.2 Explain In-place Management Risk Reduction Measures
- D.3 Prepare an Abatement Strategy Based on a Deleading Report
- D.4 Estimate Costs of the Abatement Strategy
- D.5 Prepare a Bid for a Multi-Family Deleading Contract (optional 3 hour seminar)

### **E: MEET DELEADING JOB RESPONSIBILITIES (3 hours)**

- E.1 Explain Legal Requirements for a Deleading Project (Federal, Provincial, Local)
- E.2 Explain Insurance Requirements for a Deleading Project
- E.3 Explain WCB Requirements for a Deleading Project
- E.4 Describe Potential Working Arrangements of a Deleading Contractor with Other Trades and Sub-trades

**F: WORK SAFELY (4 hours)**

- F.1 Explain Occupational Health And Safety Requirements
- F.2 Use and Maintain Health and Safety Equipment used in Deleading Work
- F.3 Manage OHS Program and Follow OHS Documentation and Reporting Procedures (WHMIS and Provincial)

**G: MANAGE THE JOB ON SITE (1.5 hours)**

- G.1 Describe Job Management Procedures
- G.2 Plan the Job
- G.3 Supervise On-site Work
- G.4 Inspect Work Progress/Accommodate Visitors and Occupants on the Job
- G.5 Maintain Job Site Records

**H: COMMUNICATE RISK (1 hour)**

- H.1 Follow Company Procedures When Dealing With Customer Concerns
- H.2 Follow Company Procedures When Dealing With Problems on the Job

**I: USE AND MAINTAIN TOOLS (1.5 hours)**

- I.1 Use and Maintain Scrapers
- I.2 Use and Maintain HEPA Vacuum
- I.3 Use and Maintain HEPA Equipped Sander
- I.4 Use Caustic Paste and Chemical Strippers
- I.5 Use and Maintain General Carpentry Tools and Equipment

**J: SELECT MATERIALS (1 hour)**

- J.1 Select Covering Materials for Window sills, Walls, Floors and Exterior
- J.2 Select Primers and Other Materials to Prepare Surface for Painting
- J.3 Select Replacement Parts (windows, doors, interior trim and siding)

**K: PREPARE WORK AREA (3 hours)**

- K.1 Explain Work Procedures and Occupant Responsibilities to Homeowners or Tenants
- K.2 Prepare Exterior Containment Area for Deleading Work
- K.3 Prepare Interior Containment Area for Deleading Work
- K.4 Build Change Area
- K.5 Organise Materials at Job Site
- K.6 Provide Ventilation by Prescribed Methods (Fan and/or Negative Air Machine)

**L: REMOVE LEAD PAINT FROM SURFACES AND MAKE READY FOR PAINTING, STAINING (4 hours)**

- L.1 Prepare a Work Plan Based on the Lead Inspection Report
- L.2 Prepare Work Area as Required
- L.3 Scrape Mouthable Surfaces (Windows, Doors, Trim, Baseboards) to Remove Lead Paint
- L.4 Use Chemical Strippers to Remove Lead Paint from Mouthable Surfaces
- L.5 Remove Lead Paint from Mouthable Surfaces Using an Off-site Dipping Service
- L.6 Prepare Delead Surface for Painting, Staining
- L.7 Clean Work Area as Required

**M: COVER/ENCAPSULATE SURFACES WITHOUT REMOVING PAINT (1.5 hours)**

- M.1 Prepare a Work Plan Based on the Lead Inspection Report
- M.2 Prepare Work Area as Required
- M.3 Cover Window Sills, Moulding and Other Mouthable Surfaces
- M.4 Cover Walls
- M.5 Cover Floors
- M.6 Cover Exterior
- M.7 Cover Painted Pipes
- M.8 Clean Work Area as Required

**N: REMOVE TRIM, WINDOWS, DOORS AND SIDING AND MAKE READY FOR REPLACEMENT (2.5 Hours)**

- N.1 Prepare a Work Plan Based on the Lead Inspection Report
- N.2 Prepare Work Area as Required
- N.3 Remove Trim
- N.4 Remove Window and Prepare Rough Opening (Interior Method)
- N.5 Remove Window and Prepare Rough Opening (Exterior Method)
- N.6 Remove Exterior and Interior Doors
- N.7 Remove Exterior Painted Siding and Prepare for Re-siding
- N.8 Clean Work Area as Required

**O: EXPLAIN IN-PLACE MANAGEMENT RISK REDUCTION MEASURES (1 hour)**

**P: CLOSE OUT JOB (2.5 hours)**

- P.1 Clean Work Area
- P.2 Prepare Non-Hazardous Waste for Disposal
- P.3 Prepare Non-Hazardous Waste for Recycling
- P.4 Handle Hazardous Waste According to Prescribed Regulations
- P.5 Conduct/Participate in Closeout Inspection
- P.6 Arrange for Homeowners/Tenants to Return to Residence
- P.7 Complete Documentation According to Prescribed Regulations

---

**TOTAL COURSE TIME**

**40 HOURS (5 days)**

# **DELEADING CONTRACTOR TRAINING COURSE**

## **COURSE OUTLINE**

### **A: APPRECIATE LEAD HAZARD AND NEED FOR DELEADING (1 hour)**

- A.1 Describe Health Effects of Lead
- A.2 Describe Groups at Risk from Lead Poisoning
- A.3 Explain Sources of Lead in the Environment and Potential Exposure to Lead
- A.4 Describe Standards for Lead Poisoning
- A.5 Identify Federal, Provincial and Local Regulations that Govern Deleading Operations

### **B: EXPLAIN TEST RESULTS (1 hour)**

- B.1 Describe Lead Test Methods
- B.2 Explain Test Results for All Tests

### **C: INTERPRET A LEAD INSPECTION REPORT (1 hour)**

- C.1 Identify Interior and Exterior Surfaces to be Tested and Abated
- C.2 Interpret Deleading Report Findings

### **D: DEVELOP AND COST A DELEADING STRATEGY (3 hours)**

- D.1 Describe The Three Basic Abatement Strategy Methods
- D.2 Explain In-place Management Risk Reduction Measures
- D.3 Prepare an Abatement Strategy Based on a Deleading Report
- D.4 Estimate Costs of the Abatement Strategy
- D.5 Prepare a Bid for a Multi-Family Deleading Contract (optional 3 hour seminar)

### **E: MEET DELEADING JOB RESPONSIBILITIES (3 hours)**

- E.1 Explain Legal Requirements for a Deleading Project (Federal, Provincial, Local)
- E.2 Explain Insurance Requirements for a Deleading Project
- E.3 Explain WCB Requirements for a Deleading Project
- E.4 Describe Potential Working Arrangements of a Deleading Contractor with Other Trades and Sub-trades

### **F: WORK SAFELY (4 hours)**

- F.1 Explain Occupational Health And Safety Requirements
- F.2 Use and Maintain Health and Safety Equipment used in Deleading Work
- F.3 Manage OHS Program and Follow OHS Documentation and Reporting Procedures (WHMIS and Provincial)

**G: MANAGE THE JOB ON SITE (1.5 hours)**

- G.1 Describe Job Management Procedures
- G.2 Plan the Job
- G.3 Supervise On-site Work
- G.4 Inspect Work Progress/Accommodate Visitors and Occupants on the Job
- G.5 Maintain Job Site Records

**H: COMMUNICATE RISK (1 hour)**

- H.1 Follow Company Procedures When Dealing With Customer Concerns
- H.2 Follow Company Procedures When Dealing With Problems on the Job

**I: USE AND MAINTAIN TOOLS (1.5 hours)**

- I.1 Use and Maintain Scrapers
- I.2 Use and Maintain HEPA Vacuum
- I.3 Use and Maintain HEPA Equipped Sander
- I.4 Use Caustic Paste and Chemical Strippers
- I.5 Use and Maintain General Carpentry Tools and Equipment

**J: SELECT MATERIALS (1 hour)**

- J.1 Select Covering Materials for Window sills, Walls, Floors and Exterior
- J.2 Select Primers and Other Materials to Prepare Surface for Painting
- J.3 Select Replacement Parts (windows, doors, interior trim and siding)

**K: PREPARE WORK AREA (3 hours)**

- K.1 Explain Work Procedures and Occupant Responsibilities to Homeowners or Tenants
- K.2 Prepare Exterior Containment Area for Deleading Work
- K.3 Prepare Interior Containment Area for Deleading Work
- K.4 Build Change Area
- K.5 Organise Materials at Job Site
- K.6 Provide Ventilation by Prescribed Methods (Fan and/or Negative Air Machine)

**L: REMOVE LEAD PAINT FROM SURFACES AND MAKE READY FOR PAINTING, STAINING (4 hours)**

- L.1 Prepare a Work Plan Based on the Lead Inspection Report
- L.2 Prepare Work Area as Required
- L.3 Scrape Mouthable Surfaces (Windows, Doors, Trim, Baseboards) to Remove Lead Paint
- L.4 Use Chemical Strippers to Remove Lead Paint from Mouthable Surfaces
- L.5 Remove Lead Paint from Mouthable Surfaces Using an Off-site Dipping Service
- L.6 Prepare Delead Surface for Painting, Staining
- L.7 Clean Work Area as Required

**M: COVER/ENCAPSULATE SURFACES WITHOUT REMOVING PAINT (1.5 hours)**

- M.1 Prepare a Work Plan Based on the Lead Inspection Report
- M.2 Prepare Work Area as Required
- M.3 Cover Window Sills, Moulding and Other Mouthable Surfaces
- M.4 Cover Walls
- M.5 Cover Floors
- M.6 Cover Exterior
- M.7 Cover Painted Pipes
- M.8 Clean Work Area as Required

**N: REMOVE TRIM, WINDOWS, DOORS AND SIDING AND MAKE READY FOR REPLACEMENT (2.5 hours)**

- N.1 Prepare a Work Plan Based on the Lead Inspection Report
- N.2 Prepare Work Area as Required
- N.3 Remove Trim.
- N.4 Remove Window and Prepare Rough Opening (Interior Method)
- N.5 Remove Window and Prepare Rough Opening (Exterior Method)
- N.6 Remove Exterior and Interior Doors
- N.7 Remove Exterior Painted Siding and Prepare for Re-siding
- N.8 Clean Work Area as Required

**O: EXPLAIN IN-PLACE MANAGEMENT RISK REDUCTION MEASURES (1 hour)**

**P: CLOSE OUT JOB (2.5 hours)**

- P.1 Clean Work Area
- P.2 Prepare Non-Hazardous Waste for Disposal
- P.3 Prepare Non-Hazardous Waste for Recycling
- P.4 Handle Hazardous Waste According to Prescribed Regulations
- P.5 Conduct/Participate in Closeout Inspection
- P.6 Arrange for Homeowners/Tenants to Return to Residence
- P.7 Complete Documentation According to Prescribed Regulations

---

**TOTAL COURSE TIME**

**32.5 HOURS (4 DAYS)**

Note: This does not include task D.5.

# **DELEADING WORKER TRAINING COURSE**

## **COURSE OUTLINE**

### **A: APPRECIATE LEAD HAZARD AND NEED FOR DELEADING (1 hour)**

- A.1 Describe Health Effects of Lead
- A.2 Describe Groups at Risk from Lead Poisoning
- A.3 Explain Sources of Lead in the Environment and Potential Exposure to Lead
- A.4 Describe Standards for Lead Poisoning
- A.5 Identify Federal, Provincial and Local Regulations that Govern Deleading Operations

### **B: EXPLAIN TEST RESULTS (1 hour)**

- B.1 Describe Lead Test Methods
- B.2 Explain Test Results for All Tests

### **C: INTERPRET A LEAD INSPECTION REPORT (1 hour)**

- C.1 Identify Interior and Exterior Surfaces to be Tested and Abated
- C.2 Interpret Deleading Report Findings

### **D: DEVELOP A DELEADING STRATEGY (1 hour)**

- D.1 Describe The Three Basic Abatement Strategy Methods
- D.2 Explain In-place Management Risk Reduction Measures

### **E: WORK SAFELY (4 hours)**

- E.1 Explain Occupational Health And Safety Requirements
- E.2 Use and Maintain Health and Safety Equipment used in Deleading Work
- E.3 Manage OHS Program and Follow OHS Documentation and Reporting Procedures (WHMIS and Provincial)

### **F: MANAGE THE JOB ON SITE (1.5 hours)**

- F.1 Describe Job Management Procedures
- F.2 Plan the Job
- F.3 Supervise On-site Work
- F.4 Inspect Work Progress/Accommodate Visitors and Occupants on the Job
- F.5 Maintain Job Site Records

**G: COMMUNICATE RISK (1 hour)**

- G.1 Follow Company Procedures When Dealing With Customer Concerns
- G.2 Follow Company Procedures When Dealing With Problems on the Job

**H: USE AND MAINTAIN TOOLS (1.5 hours)**

- H.1 Use and Maintain Scrapers
- H.2 Use and Maintain HEPA Vacuum
- H.3 Use and Maintain HEPA Equipped Sander
- H.4 Use Caustic Paste and Chemical Strippers
- H.5 Use and Maintain General Carpentry Tools and Equipment

**I: SELECT MATERIALS (1 hour)**

- I.1 Select Covering Materials for Window sills, Walls, Floors and Exterior
- I.2 Select Primers and Other Materials to Prepare Surface for Painting
- I.3 Select Replacement Parts (windows, doors, interior trim and siding)

**J: PREPARE WORK AREA (3 hours)**

- J.1 Explain Work Procedures and Occupant Responsibilities to Homeowners or Tenants
- J.2 Prepare Exterior Containment Area for Deleading Work
- J.3 Prepare Interior Containment Area for Deleading Work
- J.4 Build Change Area
- J.5 Organise Materials at Job Site
- J.6 Provide Ventilation by Prescribed Methods (Fan and/or Negative Air Machine)

**K: REMOVE LEAD PAINT FROM SURFACES AND MAKE READY FOR PAINTING, STAINING (4 hours)**

- K.1 Prepare a Work Plan Based on the Lead Inspection Report
- K.2 Prepare Work Area as Required
- K.3 Scrape Mouthable Surfaces (Windows, Doors, Trim, Baseboards) to Remove Lead Paint
- K.4 Use Chemical Strippers to Remove Lead Paint from Mouthable Surfaces
- K.5 Remove Lead Paint from Mouthable Surfaces Using an Off-site Dipping Service
- K.6 Prepare Delead Surface for Painting, Staining
- K.7 Clean Work Area as Required

**L: COVER/ENCAPSULATE SURFACES WITHOUT REMOVING PAINT (1.5 hours)**

- L.1 Prepare a Work Plan Based on the Lead Inspection Report
- L.2 Prepare Work Area as Required
- L.3 Cover Window Sills, Moulding and Other Mouthable Surfaces
- L.4 Cover Walls
- L.5 Cover Floors
- L.6 Cover Exterior
- L.7 Cover Painted Pipes
- L.8 Clean Work Area as Required

**M: REMOVE TRIM, WINDOWS, DOORS AND SIDING AND MAKE READY FOR REPLACEMENT (2.5 hours)**

- M.1 Prepare a Work Plan Based on the Lead Inspection Report
- M.2 Prepare Work Area as Required
- M.3 Remove Trim
- M.4 Remove Window and Prepare Rough Opening (Interior Method)
- M.5 Remove Window and Prepare Rough Opening (Exterior Method)
- M.6 Remove Exterior and Interior Doors
- M.7 Remove Exterior Painted Siding and Prepare for Re-siding
- M.8 Clean Work Area as Required

**N: EXPLAIN IN-PLACE MANAGEMENT RISK REDUCTION MEASURES (1 hour)**

**O: CLOSE OUT JOB (2.5 hours)**

- N.1 Clean Work Area
- N.2 Prepare Non-Hazardous Waste for Disposal
- N.3 Prepare Non-Hazardous Waste for Recycling
- N.4 Handle Hazardous Waste According to Prescribed Regulations
- N.5 Conduct/Participate in Closeout Inspection
- N.6 Arrange for Homeowners/Tenants to Return to Residence
- N.7 Complete Documentation According to Prescribed Regulations

---

**TOTAL COURSE TIME**

**27.5 HOURS (3.5 DAYS)**

Note: This is the time for the Generalist Worker course. The times for the specialist courses vary. Time estimates are shown in the main report.

# **DELEADING INSPECTOR TRAINING COURSE**

## **COURSE OUTLINE**

### **A: APPRECIATE LEAD HAZARD AND NEED FOR DELEADING (1 hour)**

- A.1 Describe Health Effects of Lead
- A.2 Describe Groups at Risk from Lead Poisoning
- A.3 Explain Sources of Lead in the Environment and Potential Exposure to Lead
- A.4 Describe Standards for Lead Poisoning
- A.5 Identify Federal, Provincial and Local Regulations that Govern Deleading Operations

### **B: USE TEST EQUIPMENT AND EXPLAIN TEST RESULTS (3 hours)**

- B.1 Describe Lead Test Methods
- B.2 Use XRF machines (both types)
- B.3 Use Sodium Sulphide
- B.4 Use Frandon Test Paint Kit
- B.5 Collect Samples for Lab AAS Test
- B.6 Collect Samples for Soil Test
- B.7 Collect Samples for Water Test
- B.8 Use Frandon Lead in Water Kit
- B.9 Explain Test Results for All Tests

### **C: DO A LEAD INSPECTION (8.5 hours)**

- C.1 Identify Interior and Exterior Surfaces to be Tested and Abated
- C.2 Prepare and Present a Lead Inspection Report
- C.3 Explain Inspector's Professional Liability Exposure
- C.4 Interpret Deleading Report Findings

*Note: Included is an additional 6 hours of practice time for this function.*

### **D: DEVELOP A DELEADING STRATEGY (1 hour)**

- D.1 Describe The Three Basic Abatement Strategy Methods
- D.2 Explain In-place Management Risk Reduction Measures

### **E: WORK SAFELY (4 hours)**

- E.1 Explain Occupational Health And Safety Requirements
- E.2 Use and Maintain Health and Safety Equipment used in Deleading Work
- E.3 Manage OHS Program and Follow OHS Documentation and Reporting Procedures (WHMIS and Provincial)

**F: COMMUNICATE RISK (1 hour)**

- F.1 Follow Company Procedures When Dealing With Customer Concerns
- F.1 Follow Company Procedures When Dealing With Problems on the Job

**G: CLOSE OUT JOB (1 hour)**

- G.1 Conduct/Participate in Closeout Inspection

---

**TOTAL COURSE TIME**

**19.5 HOURS (2.5 DAYS)**

## **APPENDIX 7**

### **CONSUMER SEMINAR OUTLINE**

### **3 - 4 HOUR CONSUMER SEMINAR OUTLINE**

#### **A. Introduction**

1. Sources of lead in the environment
2. Preventing Lead Poisoning
3. Regulations governing LBPA programs

#### **B. Health Effects of Lead Exposure**

1. Routes of entry
2. Those most at risk
3. Target Organs and Systems
4. Medical Screening for Lead
5. Treatment of Lead Poisoning

#### **C. Assessing the Problem**

1. Locations and indicators of potential lead based paint problems
2. Lead testing procedures
3. Interpreting the lead report

#### **D. Protective Equipment and Clothing**

1. Protective gear and clothing
2. Risks to the worker

#### **E. Abatement Procedures**

1. Replacement
2. Encapsulation
3. Paint removal
4. In-place Management Risk reduction measures
5. Sensible renovation packages (i.e., with window & door replacement)
6. Clean-up
7. Disposal of Hazardous Waste

#### **F. Legal Liabilities and Rights**

1. Tenant
2. Building Owner
3. Contractor
4. Inspector

#### **G. Deciding on undertaking an abatement program**

1. Getting Tested
2. Who to call to do the work
3. Where to get more information

*Optional extra for Contractors who are considering entering the industry:*

#### **H. The LBPA Industry**

1. Type and cost of equipment required
2. Training programs required
3. Safety and Health Considerations
4. Regulations and Legal liabilities

## **APPENDIX 8**

### **LETTERS TO POTENTIAL PARTNERS**

## Letter to Instructor Candidates

Dear Instructor:

In response to public concern about the effects of lead based paint in houses, Canada Mortgage and Housing Corporation (CMHC) together with a number of other government agencies is investigating the possibility of establishing a lead based paint abatement training program in Canada.

In reviewing this issue, CMHC is collecting information on the resources available to assist in launching a training program. We are writing to you to ascertain your interest in becoming a trainer to deliver either consumer seminars or industry training courses or both. Because of your past experience as a trainer, and particularly your involvement in competency-based skills training, you have been selected as a potential candidate to participate in a Train the Trainer course. This course would focus on the technical aspects of lead-based paint abatement work and the organization and delivery of the course as opposed to adult education and instructional theory.

This letter makes no commitment on either your or CMHC's part, but will assist CMHC in planning its training implementation strategy. To facilitate your response, we have prepared a reply form which you should complete and return by (Date 1992). If you prefer, you may fax your return to (fax number).

Sincerely,

## Letter to Industry Association

As per our discussion with CMHC, this requires a personal phone call and meeting.

## Letter to Funding Agencies

As per our discussion with CMHC, this would be done by delivery agent.

Letter to Community Colleges

Dear Trades/Continuing Education Department Director:

In response to public concern about the effects of lead based paint in houses, Canada Mortgage and Housing Corporation (CMHC) together with a number of other government agencies is investigating the possibility of establishing a lead based paint abatement training program in Canada.

Lead based paint abatement (LBPA) work in the United States is done mainly by renovation contractors whose employees have participated in a training course. LBPA work is another service that the renovation contractor can offer the consumer thereby providing increased employment opportunities.

We are writing to you to ascertain your interest in becoming a delivery agent for any training program that might be developed. It is anticipated that both a consumer seminar and industry training programs will become available. These could be delivered through your continuing education division and/or incorporated into existing trades training such as painter/decorator and carpenter.

If you are interested in received further information and follow-up contact, please complete the attached reply form and return it by mail by (Date, 1992), or fax it to (number).

Sincerely,

Letter to Public Housing Authorities

Dear Executive Director:

In response to public concern about the effects of lead based paint in houses, Canada Mortgage and Housing Corporation (CMHC) together with a number of other government agencies is investigating the possibility of establishing a lead based paint abatement training program in Canada.

Liability issues involving lead based paint in housing are causing concerns particularly for public housing authorities in the United States and may become an issue here in Canada. We are writing to you to ascertain your interest in becoming involved in implementation of lead based paint abatement strategies in your public housing projects. Items such as testing, training maintenance and renovation employees, liability issues, planning and managing the LBPA program in both single and multi-family dwellings are all areas that could be considered in a training program.

I will telephone you in the next two weeks to discuss your potential involvement with the CMHC LBPA program and answer any questions that you may have at that time.

Sincerely,



**LEAD-BASED PAINT ABATEMENT TRAINING PROGRAM**

**INSTRUCTOR CANDIDATE REPLY FORM**

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ CODE \_\_\_\_\_

TELEPHONE( ) \_\_\_\_\_ FAX( ) \_\_\_\_\_

\_\_\_ YES, I am interested in participating in the Train the Trainer course for the CMHC LBPA training program and in subsequent course delivery

\_\_\_ I AM UNDECIDED. Please keep my name on your active list and send me more information once it becomes available

\_\_\_ NO, I am not interested in participating in the Train the Trainer course for the CMHC LBPA training program

**Please Return by:**

**LEAD-BASED PAINT ABATEMENT TRAINING PROGRAM**

**INDUSTRY ASSOCIATION REPLY FORM**

ASSOCIATION NAME\_\_\_\_\_

CONTACT PERSON\_\_\_\_\_

ADDRESS\_\_\_\_\_

CITY\_\_\_\_\_CODE\_\_\_\_\_

TELEPHONE( )\_\_\_\_\_FAX( )\_\_\_\_\_

\_\_\_ YES, Our Association is interested in learning more about becoming a delivery agent for the CMHC LBPA training program

\_\_\_ WE ARE UNDECIDED...please send more information once it becomes available

\_\_\_ NO, We are not interested in becoming a delivery agent for the CMHC LBPA training program

**Please Return by:**

**LEAD-BASED PAINT ABATEMENT TRAINING PROGRAM**

**COMMUNITY COLLEGE REPLY FORM**

COLLEGE NAME\_\_\_\_\_

CONTACT PERSON\_\_\_\_\_

ADDRESS\_\_\_\_\_

CITY\_\_\_\_\_CODE\_\_\_\_\_

TELEPHONE( )\_\_\_\_\_FAX( )\_\_\_\_\_

\_\_\_ YES, we are interested in learning more about becoming involved in the delivery of the CMHC LBPA training program

\_\_\_ WE ARE UNDECIDED...please send more information once it becomes available

\_\_\_ NO, We are not interested in becoming involved in the delivery of the CMHC LBPA training program

**Please Return by:**