

**TRAINING NEEDS ANALYSIS FOR
THE CANADIAN PLASTICS SECTOR COUNCIL
FINAL REPORT**

Prepared for:
Canadian Plastics Sector Council
www.cpsc-ccsp.ca

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January 2011

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	2
SECTION 1: PROJECT BACKGROUND AND OBJECTIVES.....	9
1.1 PROJECT BACKGROUND.....	9
1.2 PROJECT OBJECTIVES	9
SECTION 2: METHODOLOGY	11
2.1 LITERATURE REVIEW	11
2.2 INTERVIEWS WITH KEY INFORMANTS.....	11
2.3 FOCUS GROUPS.....	12
2.4 SURVEY OF EMPLOYERS	12
2.5 CHARACTERISTICS OF SURVEY RESPONDENTS	14
SECTION 3: LITERATURE REVIEW	15
SECTION 4: PROJECT FINDINGS	25
4.1 CURRENT STAFFING AND HUMAN RESOURCES NEEDS IN THE CANADIAN PLASTICS SECTOR.....	25
4.2 BARRIERS AND CHALLENGES TO PROVIDING TRAINING	27
4.3 CURRENT TRAINING NEEDS AND TRAINING GAPS IN THE CANADIAN PLASTICS SECTOR	31
4.4 POSSIBLE SOLUTIONS TO TRAINING BARRIERS.....	36
4.5 ROLE OF CPSC & OTHER STAKEHOLDERS IN ADDRESSING TRAINING BARRIERS AND CHALLENGES ..	40
SECTION 5: CONCLUSIONS AND RECOMMENDATIONS.....	46
5.1 PROMOTE THE DEVELOPMENT OF TRAINING PARTNERSHIPS	46
5.2 DEVELOP A PLASTICS TRAINING CURRICULUM	47
5.3 DEVELOP BEST PRACTICES FOR HIRING FOREIGN WORKERS	47
5.4 MAINTAIN ONLINE INVENTORY OF CURRENT TRAINING OPPORTUNITIES	48
5.5 INCLUDE INDUSTRY REPRESENTATIVES IN THE DEVELOPMENT OF TRAINING STRATEGIES.....	48
5.6 IMPROVE UNDERSTANDING OF THE BENEFITS OF E-LEARNING.....	49
APPENDIX A – DATA COLLECTION TOOLS.....	50
EMPLOYER SURVEY	50
KEY INFORMANT INTERVIEW GUIDE	56
FOCUS GROUP GUIDE	64
APPENDIX B – LITERATURE REVIEW REFERENCES	68
APPENDIX C – FOLLOW-UP CHARTS (ANALYSIS BY REGION AND SIZE)	70

EXECUTIVE SUMMARY

PROJECT BACKGROUND

The Canadian Plastics Sector Council (CPSC) is a national not-for-profit association created to explore and address emerging human resources issues in the plastics processing industry. While the CPSC is a partnership between employers and employees, Council activities are undertaken in cooperation with a wide range of players involved in the plastics industry, including: firms, training institutions, labour unions, industry associations, and governments. Working closely with these stakeholders, the CPSC uses a consultative approach to support and further its activities.

The mission of the Council is “to enhance the competitiveness of the Canadian plastics sector nationally, and internationally, by helping to ensure a sufficient number of appropriately qualified human resources.” Based on consultations with the plastics industry, the CPSC has identified several Key Results Areas around the following objectives:

- To develop Occupational Standards and disseminate them widely.
- To establish and maintain a nationwide system to recognize individuals who have fulfilled the educational requirements or have the demonstrated knowledge, skills, experience and other requirements to perform specific occupations with proficiency.
- To engage the industry in the utilization of available skills development programs for basic and core skills as well as trade education.
- To attract and retain workers in plastics industry careers.
- To be a trusted resource on all HR and labour market issues in the plastics industry.

The goal of the current study was to gather feedback from employers and employees to improve current training systems. Specifically, this project seeks to determine whether or not the training needs of the Plastics sector are being fulfilled and to identify the nature of the partnerships required for the development and successful delivery of training.

Multiple methods of data collection were utilized for this project allowing for a richer and more complete understanding of the plastics sector, its training needs, and possible solutions to address identified concerns. These methods included a literature review to contextualize the study, 16 key informant interviews with industry stakeholders and employers, four focus groups with CPSC contacts and plastics employers, and an employer survey generating 184 completions. The results of these data collection methods were analyzed and synthesized for the final report.

HIGHLIGHTS OF THE LITERATURE REVIEW

After more than a decade of growth, which outpaced all other manufacturing sectors, there has been a significant contraction in plastic's production and employment. Since 2005, the plastics sector has experienced a steady decline in exports, from a high of \$9.6 billion in 2005 to \$8.8 billion by 2007. In addition, according to the Annual Survey of Manufacturing and Logging there has been a decline in the number of plastics employees and establishments during the past four years.

The plastics industry is predominately populated by small and medium-size firms; over 85% of establishments in the plastics sector have fewer than 100 employees. The plastics sector workforce also has characteristics that make it unique to the overall Canadian labour market. The majority (51.2%) of plastics sector workers are between the ages of 25 and 44 years, there is also a high proportion of plastics workers who speak a non-official language as their mother tongue (33.5%), who do not have a high school diploma (22.6%), and who have no post-secondary training (57.0%).

Customers of the plastics industry tend to fall into three major groups: packaging, building materials and automotive. The reliance on these customer bases can consign the plastics sector to a more vulnerable position: as both construction and automotive manufacturing witnessed reductions in demand for products with the economic downturn. While the recession's impact on the construction sector is likely to be temporary (it is anticipated that the construction sector will return to pre-recession levels of growth), its impact on the automotive sector appears to be more long term and will likely constrain demand for plastics products in the short to medium-term.

The plastics industry as a whole has also received negative publicity related to the perceived impact plastics have on the environment. Several initiatives have gained credence, both in Canada and abroad, as the use of plastic bags in retail stores has been reduced or banned. While many other stores still use bags, their use is discouraged by a surcharge. The Canadian Plastics Industry Association has responded to criticisms through the creation of a standing committee, the Environment and Plastics Industry Council, to provide information and education about the impact that plastics have on the environment and steps being taken to reduce that impact.

Training Needs and Availability

The plastics industry is technologically intensive. Efforts to increase economies of scale and reduce labour costs have prompted the introduction of increasingly technical and complex manufacturing processes. While certain technical and practical skills are necessary within the industry, the range and scope of skills need can vary widely between firms. The skill set for smaller firms remains relatively stable over time with new skills being hired for rather than trained internally. For larger firms, it is not uncommon to provide internal training for their employees to aid their progression through the company. Because of the higher level of training and education in larger firms, they are in a better position to take advantage and develop new innovations in production.

The closure of major English plastics training institutes has significantly reduced available training. Alternative types of training, however, are available to employers and employees, e.g. through the suppliers of manufacturing equipment and resin. While this training may be

useful, its primary goal is to support a new product's entry into the market. Private training companies can also provide skills development to employees. Unfortunately, the cost of providing training is often a substantial barrier for small and medium-size firms, which represent the majority of plastics manufacturers.

Training Benefits and Barriers

The benefits of having a skilled workforce cannot be overstated. Properly trained employees understand more than how to perform their job tasks; they understand how their efforts fit within the overall production process. This broader comprehension helps employees optimize resources and create solutions to production problems. In addition, employees who continue occupational training and development tend to enjoy greater job satisfaction. Finally, employee training has concrete, measurable benefits for manufacturers: lower scrap rates, fewer defective parts, faster machine start ups, decreased machine downtimes, and quicker changeovers.

The main barrier to the provision of employee training within the plastics industry is the lack of publicly-funded facilities. With the closure of these facilities, manufacturers are left searching elsewhere for training programs. On-the-job training can provide some skills, but it assumes that the required skills can be taught by available and more experienced workers. Private companies can provide training, but the associated cost can be prohibitive for small and medium-size firms. The development of regional industry clusters may offer a solution to these firms; however, for clusters to work, the impetus needs to come from industry. Suspicion about motive and limited organizational capacity among industry professionals make it difficult to develop and maintain these clusters.

Training Models

Traditional classroom based training is the best known and understood training model. Students enrol in the requisite course or program at a training facility and receive a combination of theory-based classroom instruction and practical experience. On-the-job training is another common form of teaching job skills. Although the level of formality can differ between firms, the basic concept is that newer employees are taught how to perform their jobs by more experienced staff. A mixture of classroom and on-the-job training is provided through apprenticeships, where workers are afforded formal mentorship and practical training on the work site. Other methods developed to provide theoretical type training, include distance and e-learning by which workers are able to access courses and learning materials off-site without having to leave the workplace. A final model is mobile training used in conjunction with other e-learning materials. Mobile training is typically used when workers need access to machinery and equipment that is not available in their community. Typically, this would involve the use of trailers that have the necessary equipment, and instructors can be temporarily relocated to provide the training.

PROJECT FINDINGS

Current Staffing and Human Resources Needs in the Canadian Plastics Sector

Survey respondents were asked how past labour shortages have affected them and what their perceptions were regarding future difficulties in hiring staff. Respondents were asked about their experience hiring staff prior to the economic downturn (3-5 years ago) and during the economic downturn (within the last two years), as well as their perceptions of hiring difficulties in the short term (1-2 years in the future) and long term (3-5 years in the future). Respondents indicated that they expect that hiring employees will be more problematic in the long rather than short term. Essentially, although employers felt that the weak economic environment fosters a reasonable pool of available skilled workers, there was concern that as the economy improved, all sectors - including plastics, would find it increasingly difficult to hire the skilled workers needed to meet expanding production and/or to replace retirees.

Barriers and Challenges to Providing Training

Respondents indicated that the main reasons for providing training to workers were to ensure there were skilled workers to complete needed work, to improve productivity and to ensure the production of quality products. Two major barriers were reported: a lack of appropriate and available training and the limited ability for employers to release staff to attend training. Also noted was the geographical imbalance in the availability of plastics specific training programs. Only Quebec continues to have ready access to publicly-funded plastics training.

Current Training Needs and Training Gaps in the Canadian Plastics Sector

Just under one-half (47%) of respondents experienced delays or difficulties in hiring workers, with a greater proportion reporting trouble hiring skilled workers (41%) versus unskilled workers (26%). The majority of firms (85%) reported that they had hired workers with no training in plastics. Less than one-half had hired someone with College/CEGEP training (39%) or other post-secondary training in plastics (44%). Given, however, the regional variation in access to training programs, a greater proportion (70%) of Quebec firms hired College/CEGEP graduates than did employers in other provinces.

For those employers who did hire individuals with training in plastics, the average rating of that training was satisfactory. Focus group and interview participants added that while training was useful to provide general knowledge of plastics, hands-on-training on the factory floor was needed to complete the training.

In the current training environment, interview and focus group participants highlighted the widening gap between the skills needed and those available in the industry. In particular, it is increasingly difficult to fill positions requiring a skilled foreman or plant manager. The majority of survey respondents also noted that the focus of future training efforts should be on machine set-up (64%) and machine operation (63%).

Possible Solutions to Training Barriers

The majority (67%) of survey respondents identified on-the-job training as their primary method of training. On-the-job training was also the type of training most often provided to employees (75%), as well as the highest rated in terms of effectiveness. Given, however, the dearth of other training options, this finding may reflect the limited training models used or available to plastic employers. Some focus group participants queried of the support for on-the-job training stated that since it was effectively free, it was not clear what was meant by it being “supported.” It was also noted that while on-the-job training can be useful to teach basic skills to new employees, it is limited in its ability to lead to innovation in the production processes. New staff that are trained on-the-job are constrained by the skill level of existing employees in the company. In this context, it would be difficult to train employees in new production processes, if such skill sets were not present among available staff.

In-house formal training was the second most preferred (51%), second most supported (68%), and rated as the second most effective training method. While possibly more structured than on-the-job training, the focus of in-house formal training remains on building worker competencies rather than on the development of innovation capacity.

It is unclear as to whether or not employer support for on-the-job training reflects an actual preference for such training. Perhaps it is more indicative of the perception that adequate training does not exist throughout much of Canada. Given the limited availability of publicly-funded plastics specific training available in Canada, the preference for in-house training may be out of necessity.

Role of CPSC and Other Stakeholders in Addressing Training Barriers and Challenges

Despite the challenges associated with training, the majority (54%) of survey respondents noted that their firm allocated a percentage of their revenue stream to providing employee training. The greatest proportion (46%) of these training budgets was directed toward the development of technical skills. Interview and focus group participants noted, however, that as these budgets did not allow industry to cover the costs of training, government and other stakeholders need to play a larger role in its provision within the plastics sector.

Plastics employers focus on the survival of the company. With increasing competitiveness, proprietary processes, and the economic slowdown, firms were unable to coordinate efforts to address the industry’s training needs. Survey respondents were asked to indicate at what level they would support one of four potential options to coordinate the provision of training. While all four options received broad support, the top three featured extensive industry involvement, indicating the need for an industry presence in determining how training is provided. There was, however, little consensus as to who should provide training. As 38% support was gathered for (public post-secondary institution), it is clear that more work is needed to reach a consensus on this issue.

CONCLUSIONS AND RECOMMENDATIONS

Promote the Development of Training Partnerships

Research participants generally felt that there was a need for an external organization to coordinate and arrange training opportunities within the industry. The CPSC should assume the lead in the development of training partnerships between plastics companies and external training organizations. On the national level, the CPSC should continue to maintain a dialogue with post-secondary training institutions – discussing programs offered by training institutions, the success of those programs, additional capacities within the institutions, and changing training needs of the plastics industry.

The CPSC can also assist plastics firms in developing industry advisory committees to support local training needs, and cultivate an engaging learning environment. The CPSC can investigate the development and maintenance of other manufacturing channels and generate a list of suggestions, best practices, and lessons learned - possibly acting as an advisor or liaison between regional sectors. There may be an opportunity to act as a “broker” to identify regional/sectoral training needs and connect employers with similar training needs to private and/or public training providers.

Develop a Plastics Training Curriculum

Given the national scope of the plastics industry and the specialized focus of individual firms, the CPSC is needed to develop an appropriately broad-based training curriculum. Based on the development of key skills, the CPSC could work in conjunction with plastics trainers to create occupation focused curriculum. The CPSC could then provide this curriculum to institutions as a template for training courses and/or programs. Where sufficient interest and demand exist, the CPSC could also work with plastics firms to develop more specialized modules to address specific processes within the industry.

Develop Best Practices for Hiring Foreign Workers

Many participants reported that foreign workers are increasingly being used to meet the labour demands of the industry. As the reliance on foreign workers within plastics firms increases, there is a growing need for language and cultural training for those workers. The CPSC could provide guidance on how to provide this training and better integrate foreign workers into the plastics industry. The CPSC can liaise with other agencies that work with immigrants to develop recommendations, best practices, and lessons learned when working with foreign workers.

Maintain Online Inventory of Current Training Opportunities

The CPSC can assist firms seeking training for employees by maintaining an online inventory of available training programs. Rather than having to search for programs or training institutions, the CPSC would act as a one-stop shop, listing all of the programs currently accessible to the industry. This would allow plastics firms to determine which of the available training would meet their needs and provide an outline to build a skills development strategy. The CPSC could enhance the value of this inventory by offering complementary training opportunities. Where this is not possible, the inventory should, at a minimum, offer a forum where plastics employers and employees can provide feedback regarding the utility of specific programs.

Include Industry Representatives in the Development of Training Strategies

Plastics employers expressed a strong desire to influence the training provided to their employees. It is imperative that industry representatives be included in all stages of the development of training strategies. Industry involvement will help to ensure that training programs address its needs, and are offered in an appropriate manner (i.e. classroom, e-learning, mobile training), and in a timely fashion. In addition, involving industry leaders will increase their “buy-in” for proposed solutions.

A common practice among a number of the sectors is to advocate for employer participation on local college Industry Advisory Committees (IACs). Through membership on such committees, plastics employers are better able to articulate the types of skills/training that should be provided to college students entering the plastics industry.

Improve Understanding of the Benefits of E-learning

E-learning is a promising tool for introductory instruction into plastics. While not a panacea for the training needs within the plastics industry, e-learning can make a valuable contribution to the development of employee skills. Development of e-learning modules can address employers' concerns about the cost of training, although it is recognized that e-learning cannot always replace hands-on training required for many production processes. Many sectors, however, have developed e-learning modules to address gaps in supervisory/management training for their specific industry. Despite the contribution that e-learning could provide to plastics employers, it has not achieved much support. The CPSC needs to promote the potential benefits of e-learning within the industry, as well as acknowledge its limitations.

SECTION 1: PROJECT BACKGROUND AND OBJECTIVES

1.1 Project Background

This study is not the first for the Canadian Plastics Sector Council. In 1996 and 2001 for instance, the CPSC commissioned two reports to identify high priority human resources needs for the industry. The underlying priority for both of these reports was to determine needs in occupational standards, training, apprenticeship and capacity-building programs. The Council has built on many of the recommendations of the report and has successfully implemented National Occupational Standards (NOS) and a certification system. However, to strengthen its overall human resources plan, the Council conducted another benchmark study to unify its approach to training for Canada's plastics manufacturing and processing industry.

1.2 Project Objectives

This report is concerned with the plastics industry current training systems. Specifically, this project seeks to determine whether or not the training needs of the sector are being fulfilled and to identify the nature of the partnerships required to develop and deliver training.

It is anticipated that the data collected in this research study will be used to develop potential longer-term operational plans and strategies for the sector to optimize training, apprenticeship and capacity-building programs.

In completing this research, a range of issues identified in previous studies and/or reports was addressed. In particular, it was noted that the research would be completed based on several "contextual" issues. In particular, the study was undertaken with the insights of the key findings of the 2007 study and recent consultations with the sector. Context issues included:

- Firms that took part in the CPSC Education and Training Round Table were not definitive about training needs and wants.
- Currently, the sector lacks a consistent training strategy. Most small and medium enterprises (SMEs) are dealing with training issues on a case specific basis.
- Fewer than 25% of SMEs are likely to have HR managers or formal training budgets.
- There is a preference for in-house and custom training for the sector with 25% of SMEs developing and delivering training and/or using courses offered by suppliers and private trainers.
- Compared with data collected in 1996, the 2007 results indicate an apparent decline in in-house training.
- Fewer than 10% of the firms reported any extensive contact with colleges and CEGEPs and only 16.5% reported recruiting new employees from colleges.
- What limited capacity, there was for training essential skills at the firm level was concentrated in the areas of problem solving, computer skills, plastics knowledge and machine operation.

- There was concern that respondents to the 2007 survey did not understand the formal apprenticeship system. Many considered their in-house mentor training system to be a form of apprenticeship.
- Firms displayed a strong preference for hiring lower skilled entrants as machine operators and then offering them various forms of internal training and development. The result is a workforce that was weighted toward lower skilled entry-level workers, especially amongst smaller firms. One consequence of this approach was a focus on in-house training at the expense of accessing services from the public post-secondary system.
- The need for online modular focused training that would allow employers to select specific skill training materials relevant to their staff development and processing requirements.

SECTION 2: METHODOLOGY

Multiple methods of data collection were utilized for this project. The diversity of these methods allowed for a richer and more comprehensive understanding of the plastics sector, its training needs, and possible solutions to address identified concerns. Each of the various data collection methods is outlined below.

2.1 Literature Review

In order to identify key training and human resources trends in the sector, a literature review was conducted prior to the completion of the field research. The review included previous reports prepared by the CPSC, published and unpublished reports and other background material on existing training programs within the plastics processing and general manufacturing industry, industry trade journals, and human resources articles. The results of the review helped guide the development of the various survey and research instruments. Findings from the review have been synthesized into this document.

2.2 Interviews with Key Informants

Working in consultation with the CPSC, an interview guide was developed for use with industry stakeholders and plastics employers. This guide (see Appendix A-data collection tools) was used to direct interviews with key informants and addressed the following:

- Identification of their role within the plastics industry;
- Current skills and training gaps in the plastics industry;
- The role for different stakeholders in industry training; and,
- Future training challenges/needs.

The consultant and the CPSC generated a list of interviewees who were invited to participate in the research. A total of 16 interviews, ranging from 30 to 60 minutes, was conducted, the majority (88%) of which was completed over the phone. As highlighted in Table 2-1, stakeholders interviewed for this study represented a diverse range of interests.

Table 2-1
Interviewee Roles within the Plastics Industry

Role within the plastics industry	Number of interviews
Industry employer/owner/president	3
Industry human resources/operations/employee manager	5
Business/professional association stakeholder	3
Educator/training provider or representative (including apprenticeship)	5*

* Three of the educators/training providers worked at CEGEPs in Quebec.
Reference: Interview Question A1a

2.3 Focus Groups

In addition to the key informant interviews and surveys of employers, more in-depth information was obtained through the completion of four focus groups. The focus groups allowed for further elaboration and investigation of issues identified through the interviews and the analysis of the employer survey.

One of the focus groups was conducted in advance of the employer survey. The focus of this group was the current training challenges faced by the plastics industry, possible underlying causes of these challenges, and potential solutions. The meeting was held in Toronto and was attended by CPSC contacts. Findings were used to further refine the employer survey.

The remaining three focus groups were conducted post-survey. The objective of these groups was to discuss and validate those findings generated from the employer survey. Participants were asked to consider to what extent survey findings reflected their experiences, possible reasons for the findings, and solutions to address identified concerns. A total of three focus groups were held. The first two were in Toronto and were attended by 15 people, while the last was in Edmonton with six participants.

2.4 Survey of Employers

A survey was prepared and conducted with plastics employers across Canada. Prior to full survey administration, a field test was conducted with 20 respondents. As a result of time concerns noted during the field test, the original survey was revised to decrease the time required for completion. After the appropriate changes were made, the survey was sent to all firms contained in the CPSC supplied sample. The final survey took approximately 30 minutes to complete online.

Participants were initially recruited through a mail-out sent on March 10, 2010. A total of 1000 firms chosen from the sample (with proportional representation of English and French firms) were invited to complete the survey online. Alternative ways to complete the survey (i.e. over the phone, having a copy of the survey mailed, faxed, or emailed to them) were also outlined in the letter, which was followed by phone calls to potential respondents to encourage participation. Surveying was then broadened to the entire sample provided by CPSC. Email invitations, therefore, included all individuals in the survey sample – not just the subset which had initially received the mailout. Starting on March 29, 2010, individuals received two to three email reminders encouraging completion of the online survey prior to the final date of the survey scheduled in May 17, 2010.

A total of 184 surveys were completed. As shown in Table 2-2, the majority (79%) of the firms completing the survey had fewer than 100 employees. This finding is representative of the plastics industry as a whole, where 85% of plastics establishments employ fewer than 100 people¹.

As shown in Table 2-2, only three provinces – B.C., Ontario, and Quebec – had more than 30 firms respond to the survey. As having fewer than thirty respondents limits the statistical

¹ Statistics Canada, Canadian Business Patterns Database, December 2008.

reliability of the data, several of the provinces were combined into larger regions for the purpose of analysis. The Prairie region includes Alberta, Saskatchewan, and Manitoba; and, the Atlantic region consists of New Brunswick, Nova Scotia, and Newfoundland. As the Atlantic region had fewer than 30 respondents, results for the Atlantic region should be interpreted with caution.

Table 2-2
Survey Respondents by Region, Province and Firm Size

Region	Province	Number of employees				Total	Region Totals
		5 or less	6-100	101-500	More than 500		
B.C.	British Columbia	6	23	3	0	32	32
Prairies	Alberta	5	18	4	1	28	40
	Saskatchewan	2	2	1	0	5	
	Manitoba	1	5	1	0	7	
Ontario	Ontario	11	36	9	7	63	63
Quebec	Quebec	2	26	8	4	40	40
Atlantic	New Brunswick	0	2	1	0	3	9
	Nova Scotia	1	4	0	0	5	
	Newfoundland	0	1	0	0	1	
Total	Total	28	117	27	12	184	184

Reference: Sample file, Employer Survey A3

The majority (86%) of the respondents indicated that they were located in the head office rather than in a branch office of the company. This finding is consistent with the small size of most plastic firms: they only operate in one location.

The scope of the operations for respondents is shown in Table 2-3. The majority (56%) of respondents indicated that their firm was international in scope, selling products both in Canada and abroad.

Table 2-3
Scope of Operations

Scope of Operations	Number of Firms	Percentage of Respondents
Local	24	13%
Provincial	16	9%
Regional*	27	15%
National	13	7%
International	104	56%
Total	184	100%

*Regional was defined as "more than one province, but not national."

Reference: Employer Survey A2

The type of operation in which respondents were involved is shown in Table 2-4. As can be seen from Table 2-4, two-thirds (67%) of respondents were involved in plastics manufacturing. The remaining one-third (33%) were involved in operations that supported plastics manufacturing, e.g. supplying equipment, materials, or human resources; or, they did not identify their type of work.

Table 2-4
Survey Respondents by Type of Operation

Operation Type	Number of Firms
Injection Moulding	39
Profile Extrusion	23
Thermoforming	22
Composites	7
Blow Moulding	4
Rotational Moulding	6
Plastics Fabrication	22
Other	24
No Answer	37
Total	184

Reference: Respondent Call backs

2.5 Characteristics of Survey Respondents

To determine if the survey was representative of the broader plastics sector, the characteristics of responding firms were compared against the plastics manufacturing industry as a whole (see Tables 2-5 and 2-6). As can be seen in Table 2-5, firms from Alberta and British Columbia were oversampled, and firms from Ontario and Quebec were undersampled. Representation from other regions in the sample of survey respondents, however, were close to national levels.

Table 2-5
Comparison of Firm Regions

Province or Territory	Statistics Canada	CPSC Sample File	Survey Respondents
Alberta	8.1%	5.5%	15.2%
British Columbia	10.8%	7.6%	17.4%
Manitoba	3.9%	2.3%	3.8%
New Brunswick	1.6%	1.6%	1.6%
Newfoundland and Labrador	0.3%	0.6%	0.5%
Northwest Territories	0.1%	0.0%	0.0%
Nova Scotia	1.3%	1.9%	2.7%
Nunavut	0.0%	0.0%	0.0%
Ontario	47.5%	47.8%	34.2%
Prince Edward Island	0.2%	0.2%	0.0%
Quebec	24.7%	30.8%	21.7%
Saskatchewan	1.5%	1.5%	2.7%
Yukon Territory	0.1%	0.0%	0.0%

As highlighted in Table 2-6, with the exception of large firms, generally there was a good match between survey response and the industry average on the basis of firm size (number of employees).

Table 2-6
Comparison of Firm Sizes

Number of Employees	Statistics Canada	Survey Respondents
1-4 (micro)	18.3%	15.2%
5-99 (small)	66.9%	63.6%
100-499 (medium)	13.8%	14.7%
500+ (large)	1.0%	6.5%

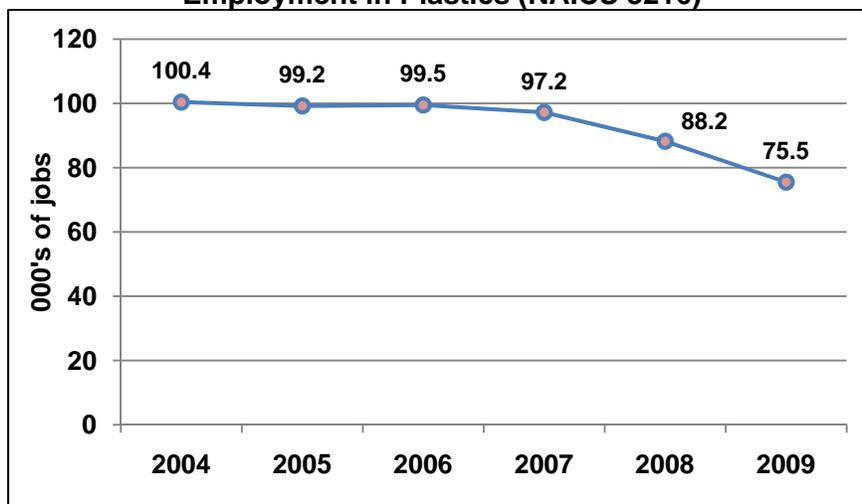
SECTION 3: LITERATURE REVIEW

After more than a decade of growth, which outpaced all other manufacturing sectors, there has been a significant contraction in plastic's production and employment. Economic uncertainty and the rising Canadian dollar have adversely impacted both the competitiveness of, and demand for, Canadian plastics products. Furthermore, the industry has been adversely affected by declines in two key sectors that traditionally have high demand for plastics products, namely automotive and construction.

Since 2005, exports have declined steadily, from a high of \$9.6 billion in 2005 to \$8.8 billion by 2007. At the same time, the domestic market has remained relatively flat with a value of \$18.9 billion in 2005, increasing by only 0.5% to \$19.4 billion by 2007. The decline in exports has contributed to a slight decrease in total production, from \$21.5 billion in 2005 to \$20.7 billion in 2007².

This reduction in output has prompted a contraction in employment in the plastics industry. The Annual Survey of Manufacturing and Logging reported a decline in the number of plastics employees and establishments over the past four years. In 2005, 2,700 establishments employed 96,932 workers. By 2007, there were 2,527 establishments employing 90,779 people³. Industry Canada has projected that this downward trend will continue as plastics manufacturers struggle to address shifting demand. As highlighted in Chart 3-1, employment in the sector as measured through the Survey of Employment, Payrolls and Hours (SEPH) (plastics – NAICS 3261) has declined by approximately 25% between 2004 and 2009. It should be noted that the decline in plastics sector employment (25%) during the period from 2004 to 2009 was significantly greater than the 14% contraction in all manufacturing employment during this same period.

Chart 3-1
Employment in Plastics (NAICS 3216)



Source: Statistics Canada, Data Request, SEPH Table 281-0024

² Source: Statistics Canada

³ Source: Statistics Canada

Although undergoing changes, the sector remains predominately populated by small and medium-size firms – fewer than 500 employees. As shown in Table 3-1, more than 85% of establishments in the plastics sector employ fewer than 100 people. This percentage is relatively unchanged from 2006. Thus, the Canadian plastics industry continues to be dominated by smaller manufacturers, although it is unclear as to the share of total employment that would be represented by such employers.

Table 3-1
Distribution of Plastics Establishments by Size of Workforce

Size of Firm	Micro	Small	Medium	Large
Number of Employees	1-4	5-99	100-499	500+
Number of Establishments	414	4,517	314	23
Percentage of Total Establishments	18.3%	66.9%	13.8%	1.0%

Source: Statistics Canada, Canadian Business Patterns Database, December 2008

The plastics sector workforce has characteristics that make it unique to both the manufacturing sector and to the overall Canadian labour market. As can be seen in Table 3-2, employees in the plastics sector tend to fall between the ages of 25 and 44 years. Compare to the manufacturing sector as a whole and the national average, there are more foreign-born workers in the plastics industry who speak a non-official language as their mother tongue. There is also a disparity in education levels among plastics workers; a higher proportion (22.6%) of plastics workers do not have a high-school diploma as compared to workers in other manufacturing industries (19.6%) and the Canadian workforce overall (15.2%). More than one-half (57.0%) of plastics workers have no post-secondary training as compared to employees in other manufacturing industries (49.2%) and the national average (41.5%). Finally, the average annual income (\$48,470) of plastics workers is below the Canadian average (\$51,211) and substantially below other manufacturing sectors (\$53,093).

Table 3-2
Key Labour Force Characteristics

	Plastics (3261)	Manufacturing (31-33)	Canada
Size of Workforce	99,810	2,005,985	17,146,130
% Male	65.2%	70.9%	52.6%
% <25 years	10.8%	10.2%	16.1%
% 25 to 44 years	51.2%	47.8%	44.2%
% 45+ year	38.0%	42.0%	39.7%
Language			
Mother tongue – English/French	66.5%	74.5%	79.7%
Mother Tongue – Non Official Language	33.5%	25.5%	20.3%
Recent Immigrants			
% recent (last five years) immigrants to Canada	8.1%	4.6%	3.5%
Highest Level of Education			
No certification, degree or diploma	22.6%	19.6%	15.2%
High school diploma only	34.4%	29.6%	26.3%
Apprenticeship/Trades Certification	11.8%	15.6%	11.8%
College Diploma	15.2%	18.4%	20.2%
University Certificate (non-degree)	3.8%	3.6%	4.7%
University Degree(s)	12.2%	13.2%	21.8%
Average Employment Income	\$48,470	\$53,093	\$51,211

Source: Statistics Canada, 2006 Census

Customers of the plastics industry can be categorized into three major groups: packaging, building materials, and automotive. The reliance of these customer bases can consign the plastics sectors to a more vulnerable position: in both construction and automotive manufacturing, demand for their products declined considerably with the economic downturn. The reliance on these customer bases jeopardizes the sector's strength as it is compromised by economic downturn in construction and automotive manufacturing. Reduced demand for their products and services similarly affects the plastics industry. The volatility of demand and the connectedness of construction and automotive manufacturing to plastics necessitate further study.

While the recession's impact on the construction sector is likely temporary (it is anticipated that the construction sector will return to pre-recession levels of growth), its impact on the automotive sector appears to be longer term⁴. Although concessions and negotiations have been made to keep US automotive firms in Canada – the recession will likely result in the permanent downsizing of automotive-related manufacturing activities in Canada.

The plastics industry as a whole has also received negative publicity related to the perceived impact plastic's have on the environment⁵. Reports of increasing amounts of plastics in landfills and plastics' purported longevity have created many grassroots groups aimed at reducing society's reliance on and use of plastics. Several initiatives have gained credence, both in Canada and abroad, as the use of plastic bags in retail stores has been reduced or banned. While many other stores still use bags, their use is discouraged by a surcharge. The Canadian Plastics Industry Association has responded to these criticisms through the creation of a standing committee, the Environment and Plastics Industry Council, to provide information and

⁴ Brown, Barry (April 28, 2009). *Canada's auto industry imperiled*. The Washington Times.

⁵ Knoblauch, Jessica (July 2, 2009). *The environmental toll of plastics*. Environmental Health News. <http://www.environmentalhealthnews.org/ehs/news/dangers-of-plastic>

education about the impact that plastics have on the environment and steps being taken to reduce that impact.

Perceived Training Needs

The plastics industry is technologically intensive. Efforts to increase economies of scale and reduce labour costs have prompted the introduction of increasingly technical and complex manufacturing processes⁶. Customer demands for higher quality, greater variety and lower costs have likewise placed pressure on plastics manufacturers to improve efficiency. These multiple pressures have created the need for a skilled workforce in the plastics industry. While it is accepted that certain technical and practical skills are necessary within the industry, the range and scope of skills needed can vary widely between firms.

A recent report for the Canadian Plastics Sector Council (2007) highlighted that smaller firms, those with fewer than 20 employees, tend to have flat organizational structures which do not differentiate greatly between employee skill levels. It tends to be the human resources policy among these firms to hire low-skilled individuals and train them with the needed skills. Given the cost of industrial upgrades, smaller firms are not able to incorporate new production processes as quickly as larger firms. As such, the skill set for smaller firms remains relatively stable over time. If new skills are required by smaller firms, the tendency is to hire out for the skill rather than train internally.

The report further indicated that larger firms, those with more than 200 employees, have a broader range of different occupations and need a greater variety of skills sets among their workers. The larger number of employees necessitates a more traditional, hierarchical organizational structure. It is not uncommon for larger firms to provide internal training for its employees to aid their progression through the firm. In addition to enhancing occupation specific skills, larger firms promote an understanding of the overall manufacturing process. Larger firms also are more likely to hire occupations with significant educational requirements, e.g., engineers, technicians. The higher level of training and education in larger firms better positions them to both take advantage of, and to develop, new innovations in production.

Finally, while plastics is relatively labour intensive compared to other manufacturing sectors, new technology is being developed constantly. Typically, new technologies rely heavily on computerized and automated processes, and, as such, require a more educated and skilled workforce. As the plastics industry recovers from the current economic downturn, an increased effort may be placed in new production processes. This will require that firms invest more time in training employees to operate new machinery and/or utilize new production processes.

Availability of Training

The closure of the Canadian Plastics Training Centre at Toronto's Humber College in 2009 signalled the end of English publicly-funded institutes offering training specifically geared toward plastics manufacturing. The College reported falling demand for the centre's programs both from individuals seeking training in the industry and from firms within the industry. Attempts to address this flagging demand met with a lukewarm response from the industry, which could not

⁶ Mital, A., et al. (1999). *The Need for Worker Training in Advanced Manufacturing Technology (AMT) Environments: A White Paper*.

generate a consensus regarding training goals. As a result, Humber College opted to fold its industrial programs into its engineering programs, citing more openings at the engineering level.⁷

While this closure marks an important change in the availability of plastics training, the shortage of public training facilities has characterized parts of the plastics industry for some time. The Northern Alberta Institute of Technology and British Columbia Institute of Technology closed their courses several years ago. The Saskatchewan plastics industry has long acknowledged a lack of plastics training in the province⁸.

Alternative types of training are available to employers and employees. Basic training with equipment or material handling can be provided by suppliers. Suppliers of manufacturing equipment routinely offer training on the operation of their machines to assist companies in optimal efficiency. Initial sessions, associated with the purchase of a new machine, are typically located in the purchaser's facility. These courses are intended to familiarize workers with the function of a specific machine, and, as such, assume a basic understanding of plastics manufacturing. Some machine manufacturers will offer more in-depth, off-site training to purchasers on a for-fee-basis. While these courses are generally geared toward greater knowledge on the operations of certain machines, some manufacturers will offer courses on more fundamental aspects of plastics manufacturing.

Resin suppliers can also be a source of information for plastics manufacturers. As with equipment suppliers, the information provided by resin suppliers assumes a basic understanding of material handling. Information provided typically comes in the form of product information sheets and handling guidelines. More extensive training may be provided with the introduction of a new material. While this training may be comprehensive, its primary goal is to support the new material's entry into the market. As such, plastics manufacturers cannot rely solely on suppliers to provide the breadth of training required to accommodate new technologies and new production processes.

An additional source of training for employers and employees is the use of third-party private training companies. These companies specialize in providing customized training at various levels for individual firms. Depending on the company and the desired training, training can be provided through web-based materials, teleconferencing, or live instruction either off- or on-site. The number of options and degree of customization make private training companies an attractive option for manufacturers. The cost, however, of providing training can be a substantial barrier for small and medium-size firms, which represent the majority of plastics manufacturers. In addition, the focus of training companies is for specific company requirements, and does not generally provide for the training of potential new entrants into the workforce. Thus, while training companies may be an option for upgrading employee skills, training companies are not a viable alternative to the lack of publicly-funded facilities, in that they are not generally available to train potential entrants considering employment in the plastics sector.

⁷ Plastics in Canada (February, 2008). "Humber College closes plastics training."

⁸ Canadian Plastics Industry Association (2002). *The Saskatchewan Plastics Industry Study: Diversification in the Saskatchewan Economy*.

The focus of training for the development and upgrading of employee skills can also be seen in the certification process outlined by the Canadian Plastics Sector Council (CPSC). The Certified Plastics Practitioner (Cert.PP) offered by the CPSC recognizes skills and competencies unique to the plastics industry. It outlines a set of National Occupational Standards for various occupations within the plastics industry and assesses individual competence against that skill list. The process, however, of applying for certification assumes a minimum number of years worked within a particular occupation. Thus, the Cert.PP encourages continuous upgrading of employee skills, but does not provide a solution to the provision of initial training to individuals seeking to enter the plastics workforce.

Benefits of Training

The benefits of having a skilled workforce cannot be overstated. Properly trained employees understand more than how to perform their job tasks; they understand how their efforts fit within the overall production process. This broader comprehension helps employees optimize and create solutions to production problems. Workers are able to bring a greater level of innovation to their job. This enhanced innovation capacity can be greatly advantageous in an industry that is facing increasing global competition and the introduction of more complicated production machinery⁹.

In addition, employees who continue occupational training and development tend to enjoy greater job satisfaction¹⁰. This sense of purpose and development has been associated with improved employee retention, particularly as higher education and increased skill levels are believed to advance career paths.

Finally, employee training has concrete, measurable benefits for manufacturers. Trained workers demonstrate a greater competence on machinery. This competence can be observed in quantifiable benefits for employers including: lower scrap rates, fewer defective parts, faster machine start ups, decreased machine downtimes, and quicker changeovers.^{11,12} All of these benefits can have a positive impact on a firm's bottom line, giving a short-term, concrete impetus for firms to engage in employee training and development.

Barriers to Training

The main barrier to the provision of employee training within the plastics industry is the lack of publicly-funded facilities, which faced various challenges in the provision of training. The material costs of training were higher relative to other manufacturing industries. In addition, given the relatively lower wages paid in the plastics industry, it was not possible to recoup these higher costs in student fees (see Table 3-2). Furthermore, the companies within the plastics industry were unable to reach a consensus concerning course content. Some firms wanted

⁹ Mital, A., et al. (1999). *The Need for Worker Training in Advanced Manufacturing Technology (AMT) Environments: A White Paper*.

¹⁰ Umiker, William O. (April, 1994). Does training increase employee retention? *Medical Laboratory Observer*.

¹¹ A. Routsis Associates, Inc (no date). *What Managers Need to Know About Training Their Production Workforce: A Guide for Plastics Companies that are Serious About Developing a Fully Skilled Workforce*.

¹² Goldsberry, Clare (September 15, 2009). What good products? Train good employees. *Modern Plastics Worldwide*.

loyal employees who know their job and would show up for work, while others were looking for skilled workers who would move into production positions. The significant contraction in employment during the past five years also diminished demand for recent graduates of publicly-funded training programs¹³.

With the closure of these facilities, manufacturers must search elsewhere for training programs. On-the-job training can provide some skills, but relies on the skills being present among the current workers. New skills may be taught by equipment and resin suppliers, especially if it is associated with the purchase of new products. Typically, however, such training is narrowly focused. To achieve broader comprehensive training of fundamental skills associated with plastics manufacturing, firms generally need to rely on private training companies.

Private training companies can provide employees with a broad range of skills, and training can be customized to meet the unique requirements of individual manufacturers. The associated cost, however, can be prohibitive for small and medium-size firms. Training companies typically charge by the number of enrollees, with a minimum number of individuals required per class. Thus, firms with fewer than 20 staff may have trouble finding enough employees to make hiring an instructor cost effective.

The development of regional industry clusters may offer a solution to small and medium-size companies. Regionally-clustered firms makes it possible for them to liaise with both private and public institutions, pool resources to access public funding, and develop training. For clusters to work, however, the impetus needs to come from industry¹⁴. Industry insiders have the best understanding of training needs and are strongly motivated to innovate, but insiders are hampered by scepticism about motives and concerns about the loss of competitive advantage(s). Until a respected and trusted industry representative can be found to champion clusters, their benefits will remain untapped¹⁵.

Previous research completed by the consultant identified the aforementioned barriers and outlined others, including:

- Limited relationship between programs and courses offered and suitability to the industry (common among publicly funded programs). Problems also exist with respect to relevance of equipment and machinery.
- Responsibility for costs associated with training. Employers often expect employees to pay for a portion of training and to participate in the training after work (evening and weekends). Employees typically expect employers to cover training costs and prefer that training be done as part of normal working hours.
- Who benefits from the training. Some employers are reluctant to invest in training if they feel that employees use their additional skills and to secure jobs elsewhere. Employers would like some guarantee that their investment in training will not be “wasted” if the employee leaves the firm.

¹³ Plastics in Canada (February, 2008). “Humber College closes plastics training.”

¹⁴ Goldsmith, James, & Green, Gary Paul (August 2009). *Wisconsin’s Plastic Valley Association: A Cluster Based Development Strategy*. Journal of Extension, 47, 1-7.

¹⁵ Landau, Steven, Ellis, Steven, Ennen, William, & Farrant, Robert (March 2000). *Strategies to Support the Plastics Industry in North Central Massachusetts: A Report to the City of Leominster*. University of Massachusetts Donahue Institute.

Conclusions and Implications

As the majority of the plastics sector workforce is between the ages of 25 and 44 years, it is reasonable to assume that workers have been at their respective jobs for some time and have acquired the skills necessary to perform the work adequately. As shown in Table 2-2, however, lower levels of education and foreign-language speaking workers predominate the plastics workforce more so than in any other manufacturing sector. As lower educated and foreign workers may lack the basic study or language skills needed to improve through training, it is less likely that they and by extension, the firm will profit appreciably¹⁶.

The human resource practices of the plastics sector reflects a dichotomy between small and large firms. While larger firms were seen to support a high level of training, smaller firms did not demonstrate the same level of commitment to employee training. Smaller firms tended to hire skill sets required, whereas larger firms were more likely to train employees when skill sets were deficient¹⁷.

As the plastics industry is redefined by changing markets and new technologies, it is unclear how useful a “train-for-the-job” strategy will remain. Increasing global competition, more automated production processes, and a demand for higher quality products are inherent challenges. A more skilled workforce, able to offer authentic contributions to production processes would be an invaluable asset in managing these challenges. As other manufacturing industries secure younger workers with promises of higher wages, maintaining lower wages to control costs may no longer be a viable human resources practice for the sector. Increased efficiency, through greater worker competence, may offer an alternative.

The development, however, of a skilled workforce is problematic. While medium and large firms may have an incentive to become more competitive globally, the expected benefits of more highly skilled workers may not accrue from the investment in training for micro and small firms. Many smaller firms operate in niche markets and produce for local needs. Their products and processes are sufficient for their enterprise. Thus, smaller firms may continue to deem their current human resources policy satisfactory. As long as size determines operation, there will continue to be different perspectives driving support for industry training options. Medium and larger firms may endeavour to move forward with more formal and systematic training, but they risk their more qualified staff being poached by other firms. To address this problem, a consensus will need to be reached concerning essential skills to plastics manufacturing and how those skills will be provided.

¹⁶ Flaman Management Partners Ltd. (2007). Second Language Training: Services and Programs in Canada. Report to the Canadian Plastics Sector Council.

¹⁷ Industry Canada (2009). Canadian Plastics Sector Industry. <http://www.ic.gc.ca/eic/site/plastics-plastiques.nsf/eng/pl01383.html>

Training Models

Traditional classroom-based training is the best known and understood training model. Students seeking comprehensive training in a particular skill set enrol in the requisite course or program at a training facility. The training provides the individual with a combination of theory-based classroom instruction and practical, hands-on experience. Traditional classroom training, however, can be problematic for both students and industry. As students must attend sessions in centralized classrooms, they need to reside or work close to the training facility. This requirement may be prohibitively expensive for some individuals, as training is usually during normal working hours and on a full-time basis, maintaining or holding employment during such training is difficult. In the case of upgrading employee skills, workers need to be released from their job duties to attend classes.

On-the-job training is another common form of teaching employees skills. Although the level of formality can differ between firms, the basic concept is that newer employees are taught how to perform their jobs by more experienced employees. On-the-job training, however, restricts the range of skill development to those that already exist in the firm. The development of new skills and innovation still requires some external impetus for their introduction. In addition, depending on the level of formality, training may degrade and/or provide a poor understanding of the production process as trainers leave the firm or retire. Furthermore, this type of training does not generally allow for formal recognition through the attainment of a credential or certificate.

A mixture of classroom and on-the-job training is provided through apprenticeships, which afford a comprehensive understanding of both occupational skills and overall production. Typically, workers are formally mentored and given practical training on the work site. Workers are also required to attend theory-oriented courses taught in traditional classrooms. An obvious advantage of the on-the-job component is that employees are able to work while training. Apprenticeships, however, can run several years and require a great deal of commitment from both workers and employers. Apprentices' commitments include attending courses that can extend for several weeks on an annual basis with limited employer support, although Employment Insurance (EI) funding would be available. Employers also need to be willing to provide jobs for apprentices while they work through the program. Thus, while apprenticeships combine the benefits of classroom and practical training, the commitment level required is often underestimated or over-looked.

Other methods have developed to provide theory-level training to workers. Through both traditional distance learning and e-learning, workers can access courses and learning materials off-site without having to leave their workplace. These methods allow workers the opportunity to augment their understanding of plastics manufacturing, typically at their own pace. Workers enrol, receive materials, complete assignments and are tested via regular mail, email, or web pages. The open format generally associated with distance learning allows workers to complete their education after-hours, enabling the worker to maintain employment. A certain level of motivation and perseverance, however, is needed to complete distance learning courses. Workers lacking the required motivation and/or employers who do not support continual training (i.e. financial support or time off work) may not benefit significantly from distance learning. Efforts have been made to encourage attendance through the provision of classes online where

workers can interact live with other students and instructors¹⁸. While it has been found to overcome motivational problems, providing courses at set times removes some of the flexibility from training and may require workers to be released from their jobs for instruction.

A final training model is mobile training, i.e., bringing the training to the students. Mobile resources are used in conjunction with other e-learning materials to train individuals seeking to enter manufacturing. Theory-level material taught to students is supplemented through practical experience that is provided in a travelling workshop. A specially designed tractor-trailer travels to groups of pupils and provides them hands-on training with production machinery. This method allows individuals located in distant and isolated locales to receive training without having to travel. It requires, however, that training institutes incur the cost of modifying and maintaining a mobile workshop. Given the high costs associated with running a mobile workshop, the demand for training needs to be sufficient to justify it. In many instances, mobile training will require a minimum number of enrollees to defray the cost of sending the equipment and instructor to a remote/rural location. In the absence of a system to coordinate training needs among several employers, this option may not be viable for employers of small to medium-size companies.

¹⁸ Industry Training Authority (March, 2006). *Alternative Trades Training: Best Practices from across Canada*

SECTION 4: PROJECT FINDINGS

The bulk of the findings was generated from the responses employers provided for the online survey administered for this study. The survey was conducted from March 10, 2010 to May 17, 2010 and generated 184 completions by plastics employers (see Section 2.4). The distribution of firms by size and region of operations can be found in Table 2-2. The distribution of the number of firms by type of operations within the plastics industry can be found in Table 2-4.

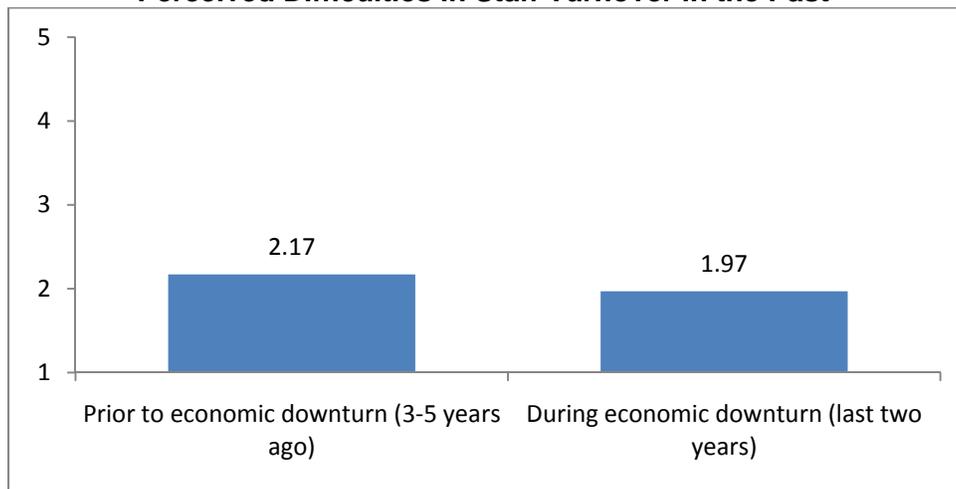
The numbers provided in charts represent survey respondents as a whole. Given the expectation that the region in which the firm operates and its number of employees might influence response, each of the questions was analyzed by region and size. The analysis by region included five areas: British Columbia, the Prairies (Alberta, Saskatchewan, and Manitoba), Ontario, Quebec, and the Atlantic (New Brunswick, Nova Scotia, and Newfoundland). The analysis by size included four categories of firms, micro (four or fewer employees), small (five to 99 employees), medium (100 to 499 employees), and large (more than 500 employees). In addition, results were analyzed by type of operations. The analysis by type of operation did not include those firms which responded “other”, or did not give an answer as to their type of operation. This exclusion left seven (7) types of operations: injection moulding, profile extrusion, thermoforming, composites, blow moulding, rotational moulding, and plastics fabrication. This exclusion also reduced the sample size to 123 respondents for any analysis involving the type of operations. Key statistically significant differences are discussed in the body of the report. Supporting tables are available in Appendix C.

In addition to the survey analysis, the findings incorporate, where applicable, feedback collected through interviews with employers, plastics trainers, and other plastics industry stakeholders. This information was provided through one-on-one interviews or focus groups and was used to contextualize, highlight and expand the findings generated through the survey analysis.

4.1 Current Staffing and Human Resources Needs in the Canadian Plastics Sector

Survey respondents were asked how past labour shortages affected them and what their perceptions were regarding future difficulties in hiring staff. For past experiences, respondents were asked to rate their experiences hiring staff prior to the economic downturn (3-5 years ago) and during the economic downturn (within the last two years). Using a scale ranging from 1, not at all an issue, to 5, a major issue, respondents were asked to identify the extent to which staff turnover had been problematic. As shown in Chart 4-1, respondents reported that there were no great difficulties with turnover in the past. Furthermore, there was a slight reduction in difficulties over the last two years (1.97) versus prior to the economic downturn (2.17). It should be emphasized that given the 25% reduction in employment in the plastics sector from 2004 to 2009, it would be expected that employers would report few or no hiring difficulties during the past two years. Employers, however, in some regions of the country experienced more problems hiring staff than was the case for employers across Canada.

Chart 4-1
Perceived Difficulties in Staff Turnover in the Past*



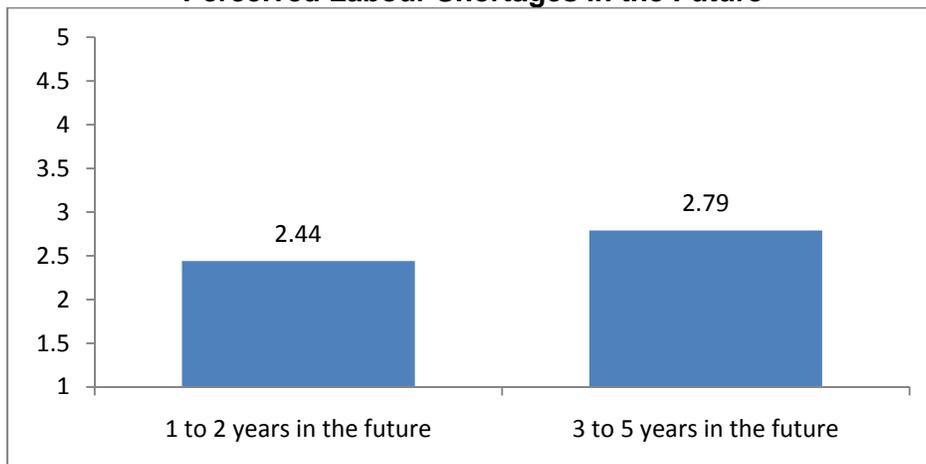
N(3 to 5 years ago)=180, N(last two years)=182; Does not include "Don't know"

Reference: Employer Survey B1a & B1b

* Numbers represent an average score on a five point scale from 1="not at all an issue" to 5="a major issue". Higher numbers indicate a greater perceived problem with staff turnover.

When asked about perceived challenges in hiring future staff, respondents were pessimistic. As shown in Chart 4-2, respondents generally felt that labour shortages would worsen over time. This concern was particularly high for companies based in Quebec.

Chart 4-2
Perceived Labour Shortages in the Future



N(1 to 2 years)=178, N(3 to 5 years)=175, Does not include "Don't know"

Reference: Employer Survey B2a & B2b

* Numbers represent an average score on a five point scale from 1="not at all an issue" to 5="a major issue".

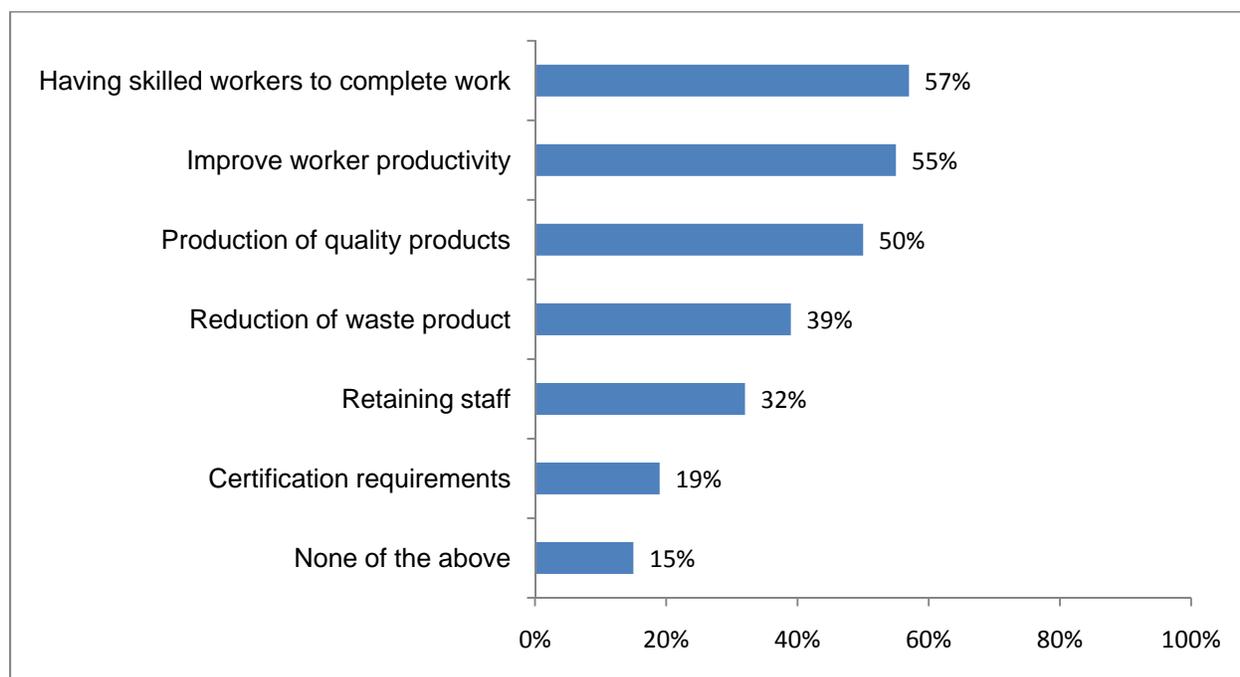
Higher numbers indicate greater perceived labour shortages.

Quebec-based companies felt that challenges for the next one to two years (3.33) would increase and continue to escalate three to five years (3.75) into the future (see Table C-2). Focus group participants indicated that the differences in Quebec are an outcome of several factors. Focus group participants noted that the plastics sector in Quebec would be adversely affected by competition from other sectors (especially for young, new entrants), and that the aging workforce in Quebec's plastics sector would contribute to greater turnover as these workers retire.

4.2 Barriers and Challenges to Providing Training

Employers were asked to explain why their organization supports training. In general, more than one-half of employers noted that training was needed so that skilled workers were available to complete the work and to improve worker productivity. A significant proportion (50%) of employers also noted that training would contribute to the production of better quality products and that training would reduce waste (39%). It is interesting to note that few employers (32%) associated training as a human resources strategy to retain staff.

Chart 4-3
Impetus for Employee Training



N=184

Reference: Employer Survey C1

Multiple responses permitted.

There are regional variations as to which issues are the primary concern to employers regarding training. The biggest difference observed was the role that retaining staff played in employee training. Both British Columbia (59%) and the Prairies (43%) employers were more likely to cite training as a means to retain staff than did employers in other regions of the country (see table C-3).

An additional regional variation was found relating to the reduction of waste product. While, notwithstanding, training as a means to reduce waste products was generally of similar concern, in Ontario this was less often identified as an issue (25%) (see Table C-4). This variance may be due to more modernized facilities operating in Ontario that automate the recycling of waste plastic.

An organization's size was also a determining factor as to which issues were more likely to be of concern. In particular, improving worker productivity was cited less often by micro firms (39%) as a reason to train employees than it was cited by medium-sized firms (82%) (see Table C-5). Micro firms were less also likely to report the production of quality products (29%) as a training concern than did the larger firms (see Table C-6).

A key aspect of the research was to identify reasons why employers are reluctant to support training. As highlighted in Chart 4-4, it appears that there are significant "internal" and "external" barriers to training.

External barriers to training include:

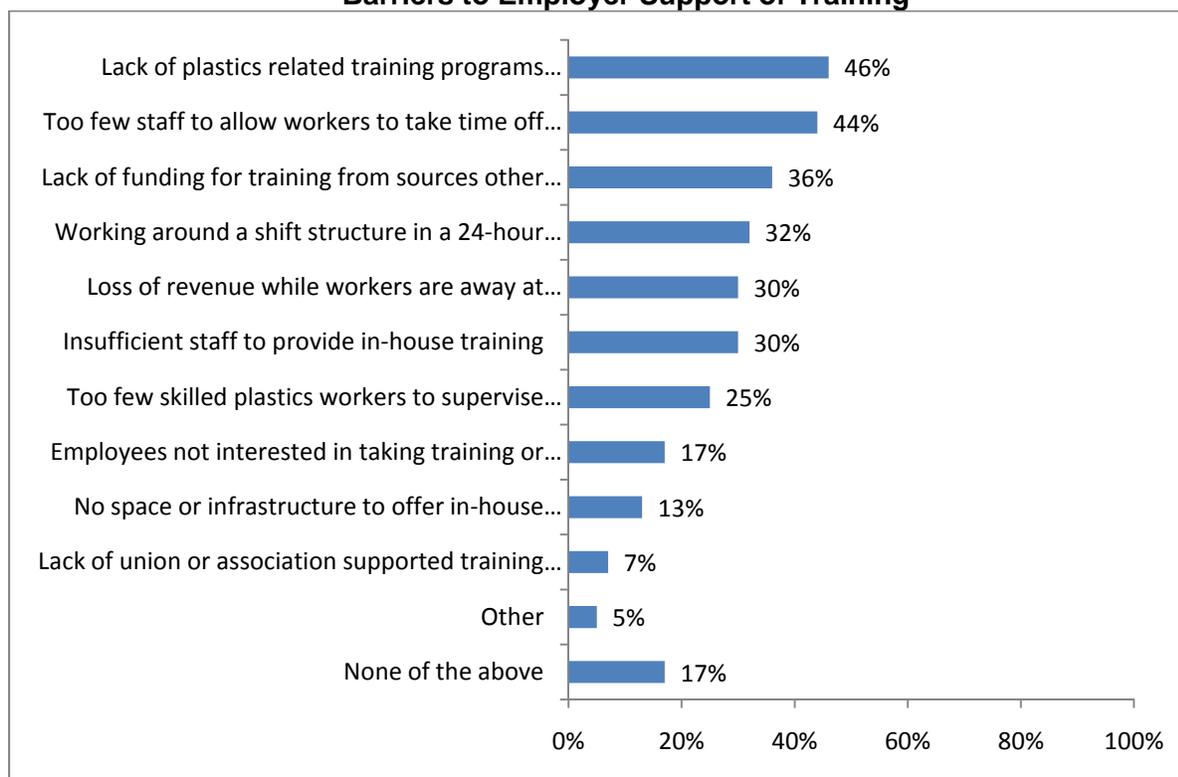
- Absence of available plastics-related training programs (cited by 46% of employers)
- Lack of funding for training from sources other than the company (36% of employers)

Internal barriers to training include:

- Too few staff to allow for time off to receive training (44%)
- Difficulties in accessing training due to shift work (32%)
- Loss of revenue while workers are training (30%)
- Insufficient staff to provide in-house training (30%) or too few experienced plastics workers to supervise new or unskilled workers (25%)
- Lack of employee interest (17%)

Clearly, the results of the survey reveal that employers face various barriers regarding the provision of training.

Chart 4-4
Barriers to Employer Support of Training



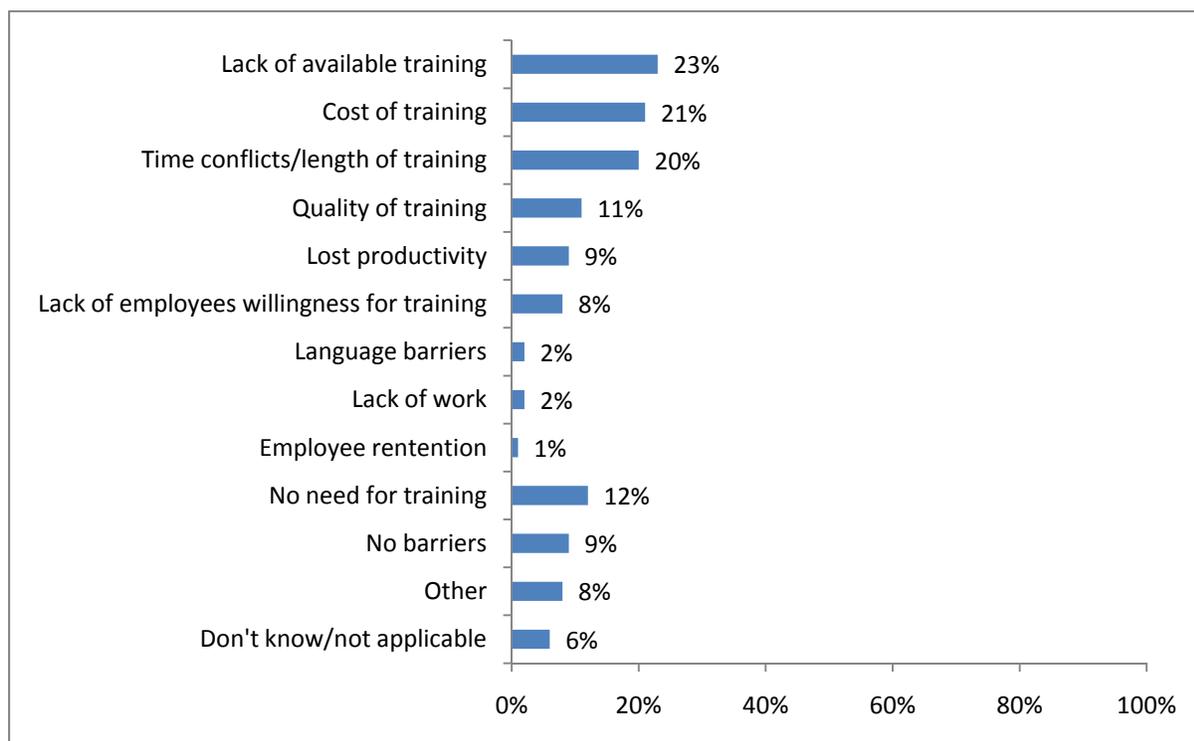
N=184

Reference: Employer Survey C4

Responses also varied on the basis of firm size. Overall, micro and small firms were less likely than larger firms to report that working in a 24-hour shift environment was a challenge to the provision of training. None of the micro firms and only one-third of small firms reported that the 24-hour work environment created a challenge to training (see Table C-7). This difference may reflect the lack of 24-hour production in smaller firms.

Despite the commonality in challenges among smaller firms, the variety of company experiences was demonstrated again when respondents were asked to state the biggest barrier their organization faced in providing training. As shown in the Chart 4-5, no single barrier was indicated by more than one-quarter of participants. Each of the top three responses, lack of available training, cost of training, and time conflicts or length of training, only garnered between 20% and 30% agreement among respondents. Furthermore, just over one-fifth (21%) of respondents had no concerns with training as 12% reported there was no immediate need for employee training and 9% stated there were no barriers, whatsoever, to accessing training.

Chart 4-5
Biggest Challenge to Training



N=184

Reference: Employer Survey C5 (responses were coded)
Multiple responses permitted.

The challenges in providing issues faced by the plastics industry were further elaborated through key informant interviews and focus groups. As noted in Chart 4-5, a lack of available training programs was mentioned most frequently. Respondents noted that with the closure of the plastics training program at Humber College, there were no publicly-funded training programs outside of Quebec. The high costs of providing plastics training and low student enrolment adversely affected these programs.

This lack of available training was restated by informants focusing on the geographical imbalance of existing programs. The plastics industry is national in scope; but, outside of Quebec, there are few regions that offer private training. Therefore, as many companies are not located within close proximity to training facilities, their employees cannot access available programs.

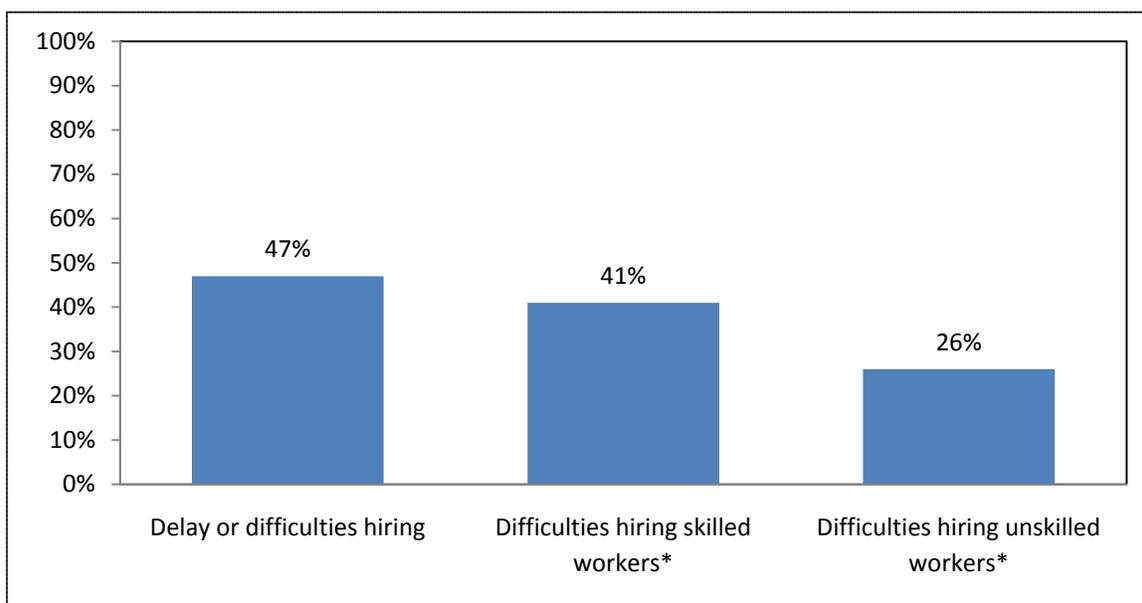
It was also noted in the research that firms that were located in regions where there was high demand for skilled workers (BC, Alberta), there was concern expressed by some employers that training could be “counterproductive” for the firm, in that once employee skills were upgraded, such employees would often be recruited by other sectors, especially the oil and gas sector.

4.3 Current Training Needs and Training Gaps in the Canadian Plastics Sector

To better understand training needs and gaps, respondents were asked about any delays or challenges they had experienced in hiring workers. As noted in Chart 4-6, nearly one-half (47%) of the firms responding stated that they had experienced difficulties or delays in recruiting employees. Hiring difficulties were significantly greater for skilled workers (41%) than for unskilled labour (26%).

Chart 4-6

Percentage of Employers Indicating Difficulties Hiring Workers



N=184

Reference: Employer Survey B3a & B3b

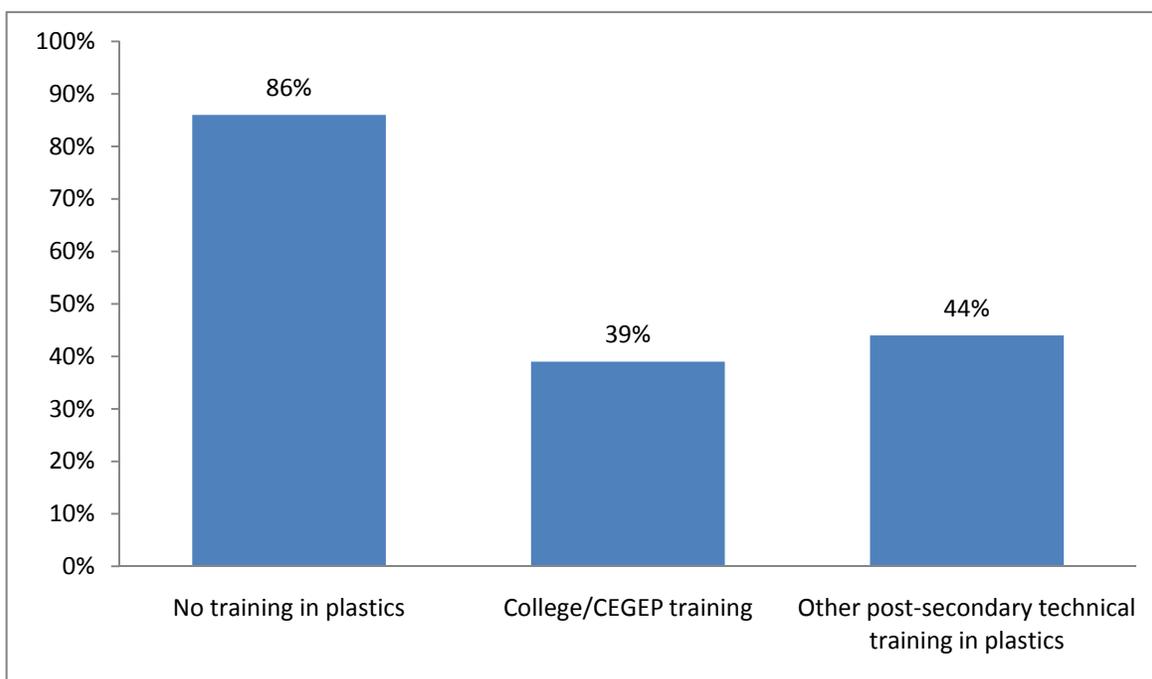
Recruiting difficulties were much higher in Quebec than elsewhere in Canada, as more than three-quarters (78%) of Quebec based firms experienced delays and difficulties in hiring workers (see Table C-9). Informants in Quebec noted that it was increasingly difficult to attract new and young workers to the industry.

For those firms which reported difficulties in hiring workers, those difficulties were not predicated on either region or company size. However, both the focus groups and informants identified hiring skilled workers as more difficult than hiring unskilled labour. Survey respondents echoed this concern, as more than three-quarters (86%) of firms had hired individuals with no training in plastics. Conversely, fewer than one-half of respondents reported having hired workers with

previous college/CEGEP training (39%) or other post-secondary technical training in plastics (44%).

Chart 4-7

Percentage of Employers Who Have Hired Employees with Different Levels of Training



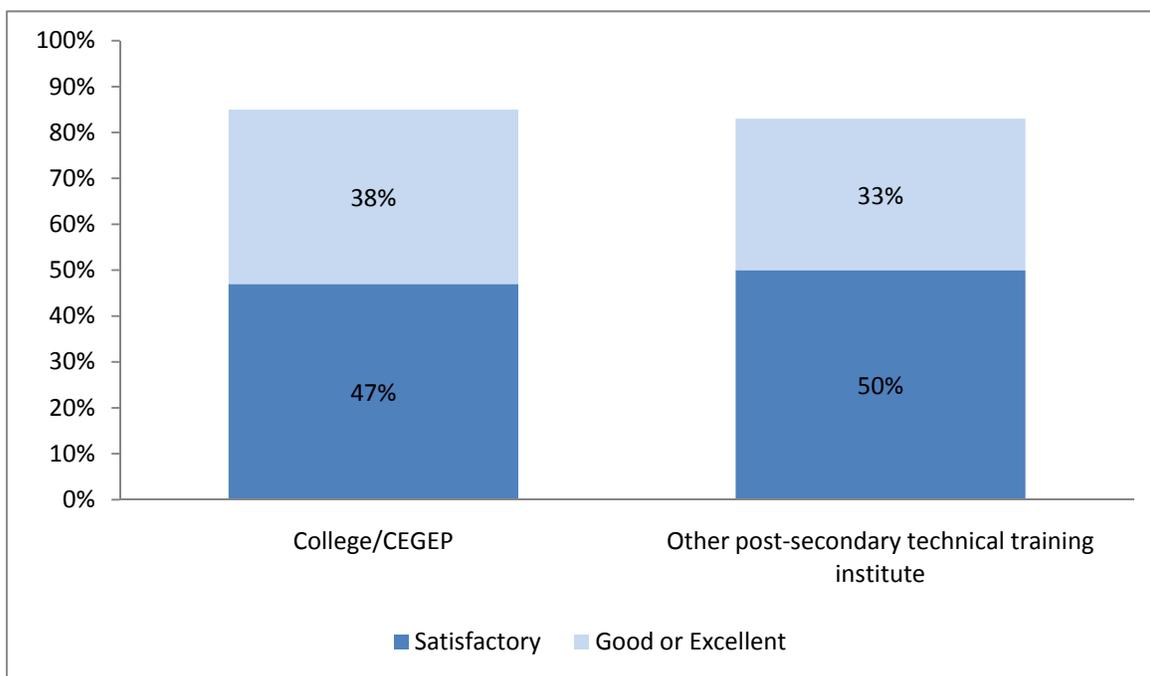
N=184

Reference: Employer Survey B4a, B4b, & B4c

Quebec had the greatest proportion (70%) of firms that had hired individuals with College/CEGEP training (see Table C-10). This is consistent with the lack of publicly-funded college training programs in regions outside of Quebec. In contrast, the availability of college/CEGEP courses in Quebec did allow Quebec-based employers to hire individuals who had prior specific training in plastics-related processes. In contrast, the lack of available plastics training in English Canada and the low proportion of firms hiring trained workers poses a difficulty for addressing the developments in plastics projected in the Technology Road Map for the Plastics Industry. Skilled workers are needed to ensure adequate understanding of the underlying principles of plastics processing to support current and future innovation in the sector.

For those firms that did hire candidates with some plastics training, that training was typically not highly regarded. Only 38% of employers rated college/CEGEP as either good or excellent; and, only 33% rated other post-secondary plastics training either as good or excellent. As shown in Chart 4-8, firms predominately rated post-secondary plastics training as satisfactory at best.

Chart 4-8
Satisfaction Ranking of Previous Plastics Training



N(College/CEGEP)=71; N(Other post-secondary technical training institute)=80

Reference: Employer Survey B5

It was generally noted by focus group participants and key informants that while post-secondary training was useful, given the unique technical processes and marketing niches of individual plastics manufacturers, all new employees would require time and training to adjust to specific manufacturing processes used by individual firms. While training does provide new employees with solid grounding in general plastics manufacturing and theory, it was felt that practical experience on the factory floor was needed to complete the education. This gap in skill development was commonly noted as was the concern that it could not easily be overcome. The sheer diversity of technologies, techniques and processes utilized in the industry, as well as the competitive secrecy maintained by firms, necessitated that at least some of the workers' skills can only be gained on the factory floor.

Additional training gaps were specifically highlighted during interviews and focus groups. Informants were asked about where additional training was needed within the industry. Respondents commonly stated that the industry, as a whole, was under-skilled and under-experienced. A lack of training, a lack of new entrants, and an aging skilled workforce all contribute to the discrepancy between the skills needed in the industry and the skills available. In particular, it was noted among employers that it was increasingly difficult to fill positions requiring a skilled foreman or plant manager. Unfortunately, it is those exact positions that the Technology Road Map predicts will prove critical in capitalizing on future developments in the plastics sector.

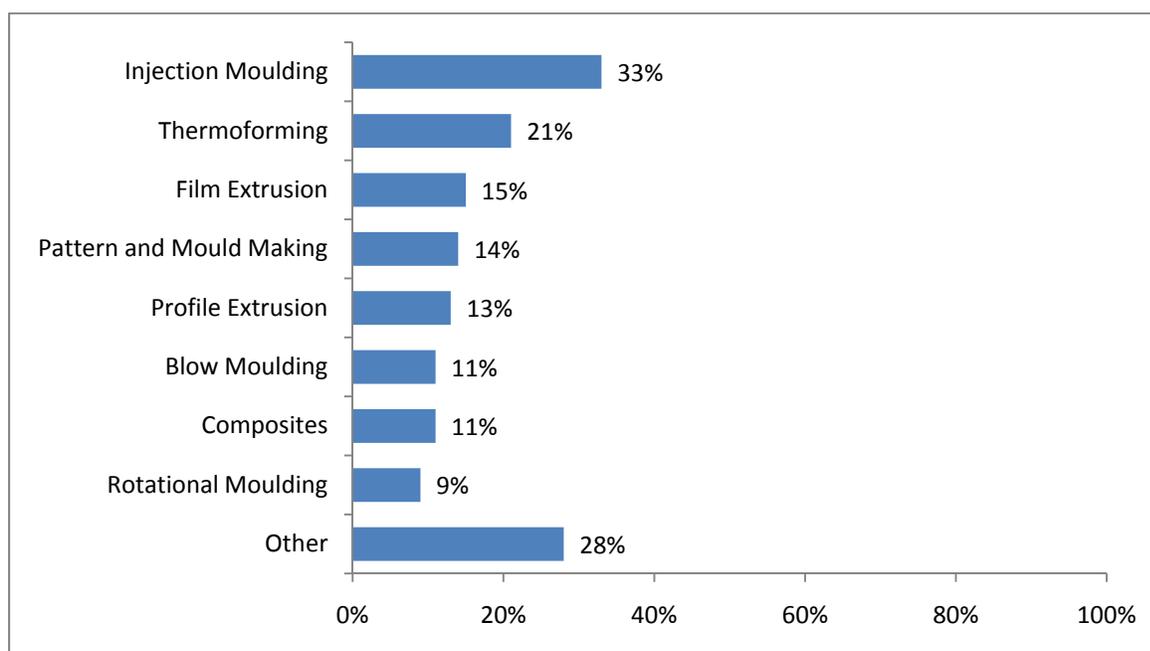
Typically, however, the individuals at the apex of the firm's organizational chart are well versed in plastics manufacturing. It was also reported that training unskilled individuals in the basics of

plastics manufacturing was not a difficult matter. The challenge was to find individuals with the ability to problem solve and support upper management in the production process. Given the general unavailability of plastics training and the difficulty in recruiting and retaining new employees, there was no defined program that could address the skill requirements of middle management in most plastics firms. It was reported at one focus group that it could take several years to recoup the experience lost by a senior person leaving the company. This gap in employee skills will prove especially problematic with the move toward mass customization outlined in the Technology Road Map.

Key informants were also asked to express their views on gaps in non-technical skills within the plastics industry. A lack of management and supervisory skills, as well as problems with communication and language skills were expressed. With a growing need for skilled labour, some companies are hiring non-English speaking workers to address their recruitment needs. This increased reliance on foreign workers has necessitated that employers support the development of appropriate language skills by employees. However, in contrast to the limited availability of plastics technical training, respondents agreed that effective training in both management and language skills was available; and both companies and employees were able to access this training as needed.

As a final question, survey respondents were asked where they would like future training efforts for specific technologies focused. As seen in Chart 4-9, there was no general consensus in the type of technologies that firms felt was the highest priority. The most common response selected, Injection Moulding, was identified by only a third (33%) of respondents.

Chart 4-9
Employer Support For Training – Specific Technologies

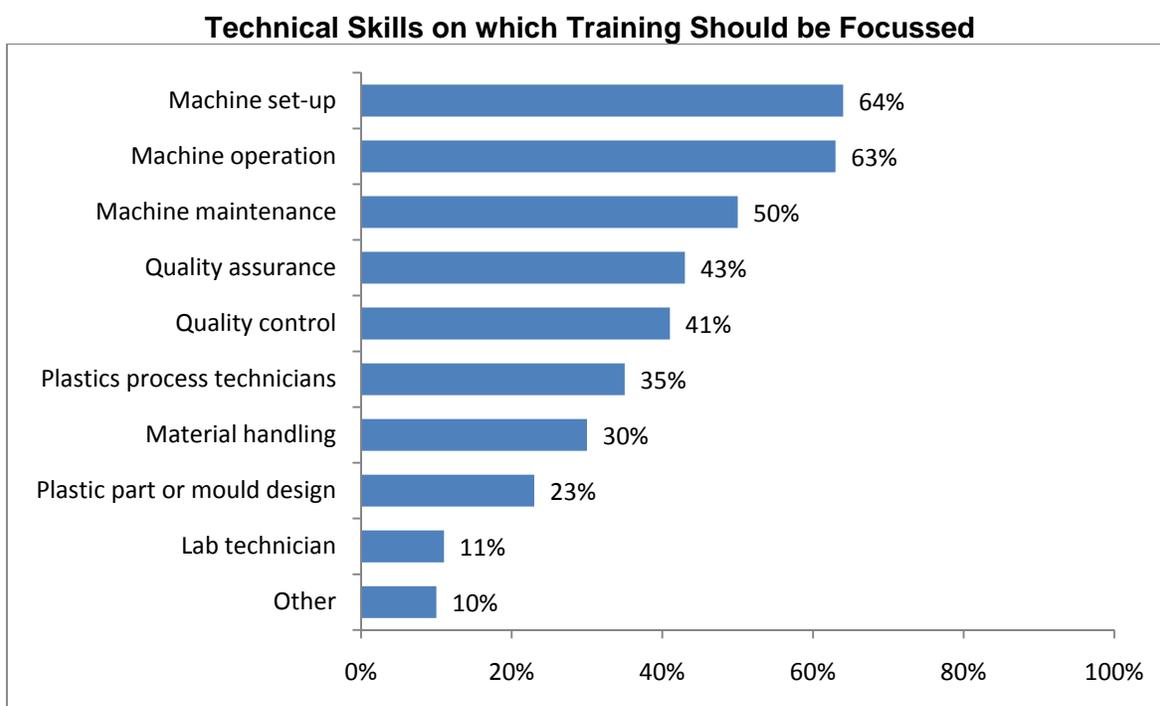


N=184

Reference: Employer Survey D8

Survey respondents had a strong preference, however, for the types of technical skills on which they prefer training to be focussed. One-half, or more, of respondents indicated that training should develop the machining skills of workers, i.e., machine set-up (64%), machine operation (63%) and machine maintenance (50%). With the current generation of skilled “machinists” moving into retirement, it is their skills that are in most demand by plastics manufacturers, which is in line with what is expected to be needed according to the Technology Road Map (see Chart 4-10).

Chart 4-10

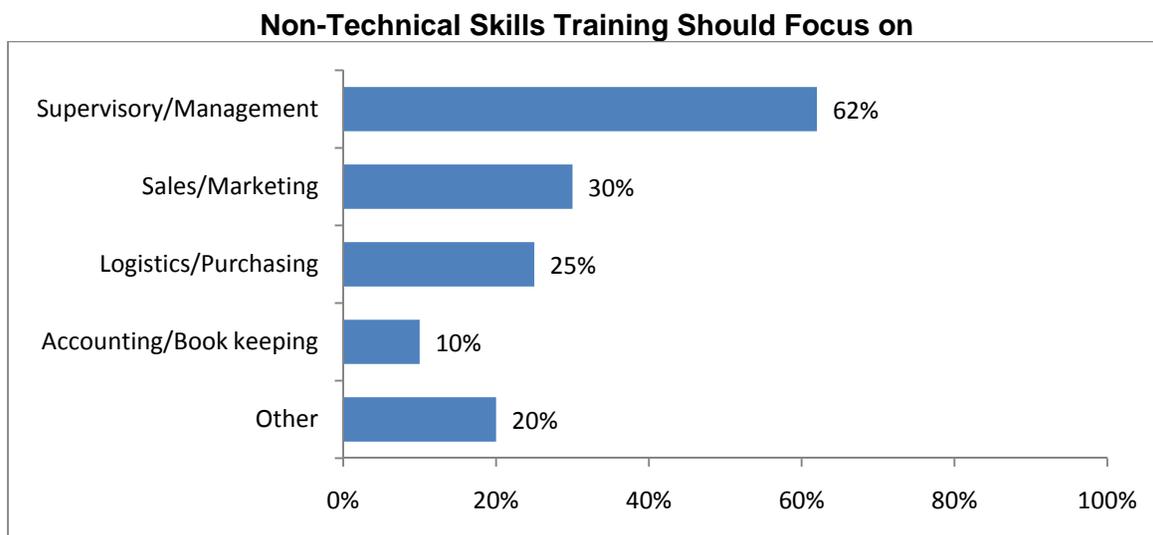


N=184

Reference: Employer Survey D8

As for non-technical skills, the category predominately cited as the preferred focus of training was supervisory/management (62%)(see Chart 4-11). As previously mentioned, however, it was generally felt that these skills were not plastics-specific and as such could be addressed through existing training programs.

Chart 4-11



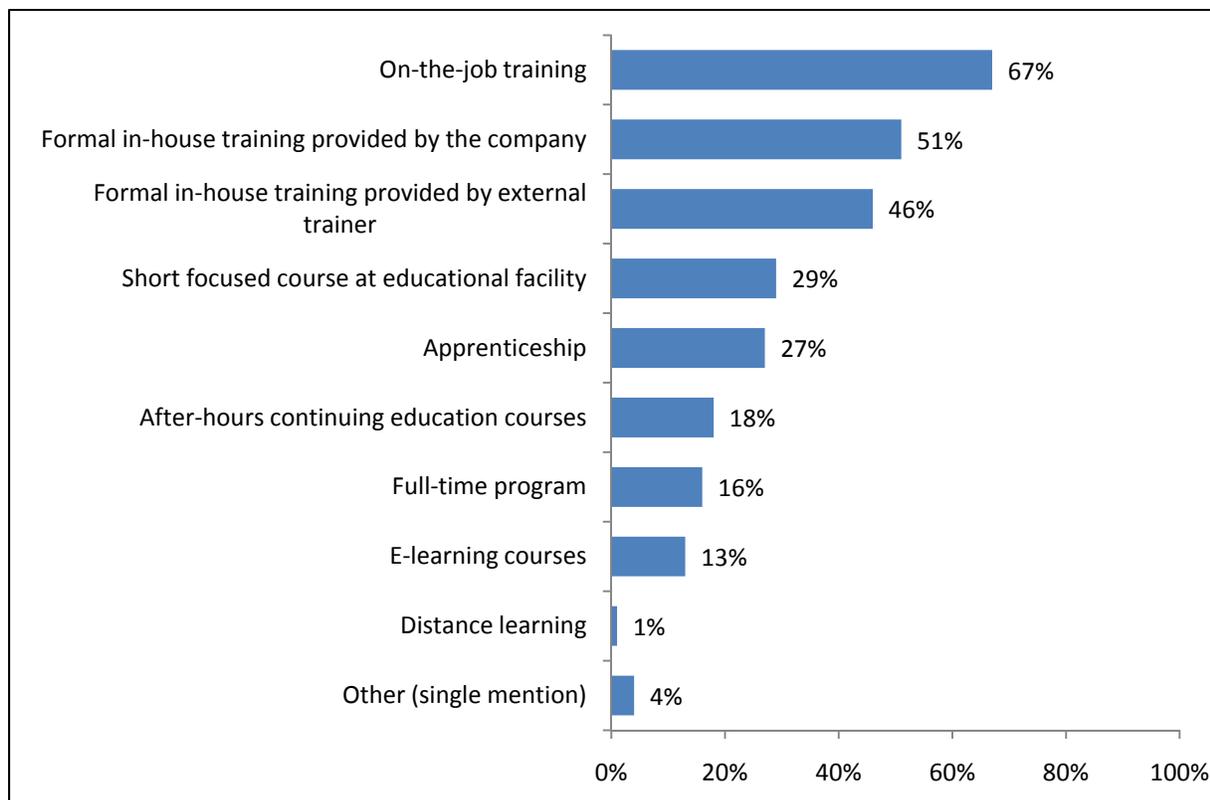
N=184

Reference: Employer Survey D8

4.4 Possible Solutions to Training Barriers

To understand how best to address the training needs within the plastics industry, survey respondents were asked about their preferred method of training, types of training that their firm had supported over the past twelve months, and their perceptions of how effective that training was in providing workers with the necessary skills. As can be seen in Chart 4-12, on-the-job training was the most frequently cited method for developing worker skills: identified by 67% of firms. Given that on-the-job training limits skill development to those already within the firm, this finding is at odds with the Technology Road Map, which highlights the need for innovation, as well as the earlier mentioned finding about the increased need for employees with adequate problem-solving skills. Given, however, the dearth of other training options, this finding may reflect the limited training options available to plastic employers.

Chart 4-12
Preferred Training Methods



N=184

Reference: Employer Survey D7

* Respondents were asked to select up to three preferred types of training.

It is worth noting that the top three preferences for types of training: on-the-job, formal in-house training provided by the company, and formal in-house training provided by an external trainer, necessitate that training be done at the factory. It may be that the diversity of processes used by different companies, as noted in Chart 4-12, may best be addressed by conducting training within the firm. This would allow for greater customization of the training provided to meet the unique needs of individual firms. When training is provided outside the firm, there is a marked decline in preference – from formal in-house training provided by external trainer (46%) to short focused courses at an educational facility (29%).

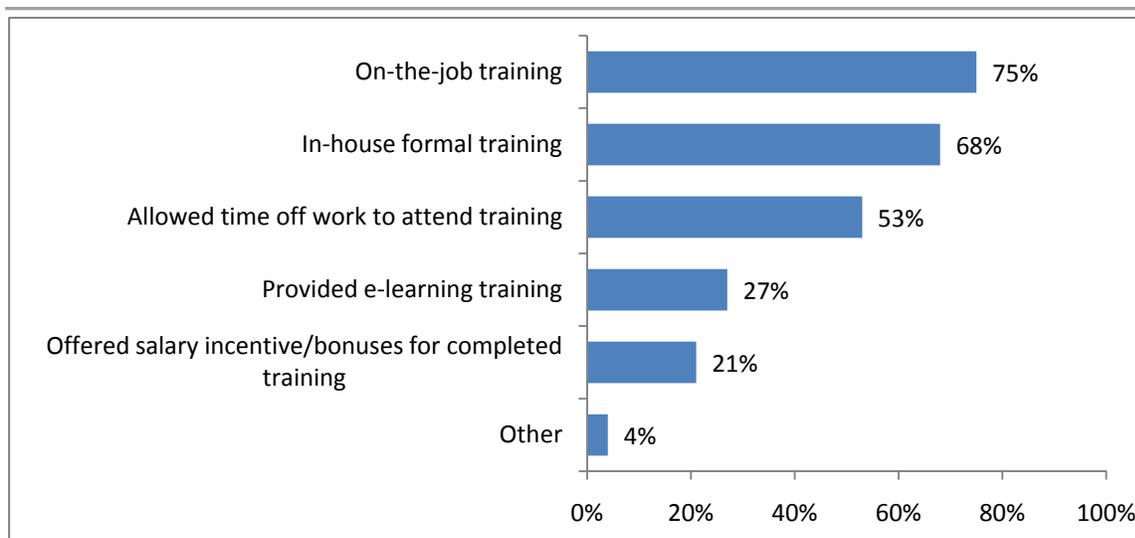
Regional analysis revealed specific preferences, or dislikes, for the different types of training. Specifically, both the Prairies (63%) and Quebec (63%) indicated formal training provided by an external trainer as a preferred method more often than did the rest of the country (See Table C-12). Quebec (8%) was far less likely than other regions to state a preference for apprenticeships (see Table C-13).

When directly asked, however, if an apprenticeship training program would be appropriate for the next generation of plastics workers, it was a broadly supported by all firms. Almost three-

quarters (72%) of respondents expressed that apprenticeships would be appropriate in the future. In addition, this support did not vary by region, a firm's size. The implication, therefore, is that while apprenticeships tend not to be the most preferred method, employers are keen to use whatever training would generate a new wave of skilled workers.

As seen in Chart 4-13, the most common type of plastics training supported by survey respondents (75%) over the past twelve months was on-the-job training. As with preferred types of the training, additional factory-based training, i.e., formal in-house training, also received wide support. More than two-thirds (68%) of respondents indicated that their firm recently supported this activity.

Chart 4-13
Training Methods Supported in the Last Twelve Months



N=184

Reference: Employer Survey D2

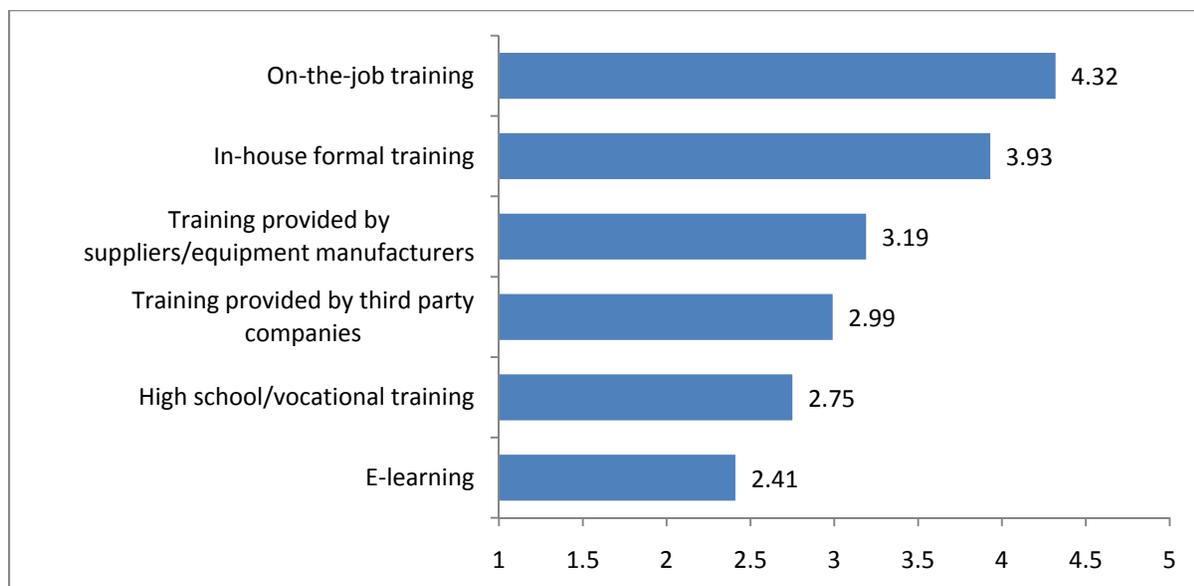
There were different levels of support for the various training methods across regions. In particular, Quebec firms were less likely to support on-the-job training than were other regions in Canada (see Table C-14). Quebec's relative lack of interest may be because formal training is more readily available in Quebec than in other regions. Both Quebec (13%) and the Atlantic (11%) region were less likely to have supported e-learning as a method of training in the past twelve months (see Table C-15).

Support for the different types of training was influenced by the size of the firm. In particular, micro firms were limited in the type of support provided for employee training. Specifically, fewer (25%) micro firms supported time off for workers to attend training (see Table C-14), which may be indicative of less flexibility in work schedules. Fewer (50%) micro firms also supported in-house formal training, a finding that could reflect a lack of economies of scale to supply formal training materials (see Table C-17). As noted by several key informants and focus group participants, bringing training into a firm can be costly, especially if the firm does not have a sufficient number of employees to enrol in "customized" training courses.

While on-the-job training was the most supported means of developing worker skills reported by survey respondents, some focus group participants found that finding suspect. One participant noted that since on-the-job training is typically viewed as effectively being free, it was unclear as to what was meant by “supported.” In addition, a key informant noted that while on-the-job training can be useful to teach basic skills to new employees, it is limited in its ability to lead to innovation in the production processes. New employees who are trained on-the-job are constrained by the skills already available in the company. It was noted among focus group participants that on the job training typically was used to train individuals to attain experience and understanding of existing processes, but was not useful to expand worker knowledge to take advantage of new technologies and/or production processes.

While these criticisms may prove valid, they were not reflective of the experience reported by survey respondents. When asked to rank the effectiveness of different types of training, on-the-job training was ranked as the most effective means of developing employee skills (see Chart 4-14). Again, it should be noted that given the absence of publicly-funded training outside of Quebec, employers may have little opportunity to comment on the utility of alternate training methods.

Chart 4-14
Average Effectiveness Rankings of Training Methods*



N(On-the-job training)=178, N(In-house formal training)=172. N(Training provided by suppliers/equipment manufacturers)=162, N(Training provided by third party companies)=118, N(High school/vocational training)=127, N(E-learning)=127; Does not include "Don't know"

Reference: Employer Survey D1

* Numbers represent average score of respondents on a scale from 1=Not effective at all to 5=Very effective, therefore higher scores indicate a greater perceived effectiveness of training method.

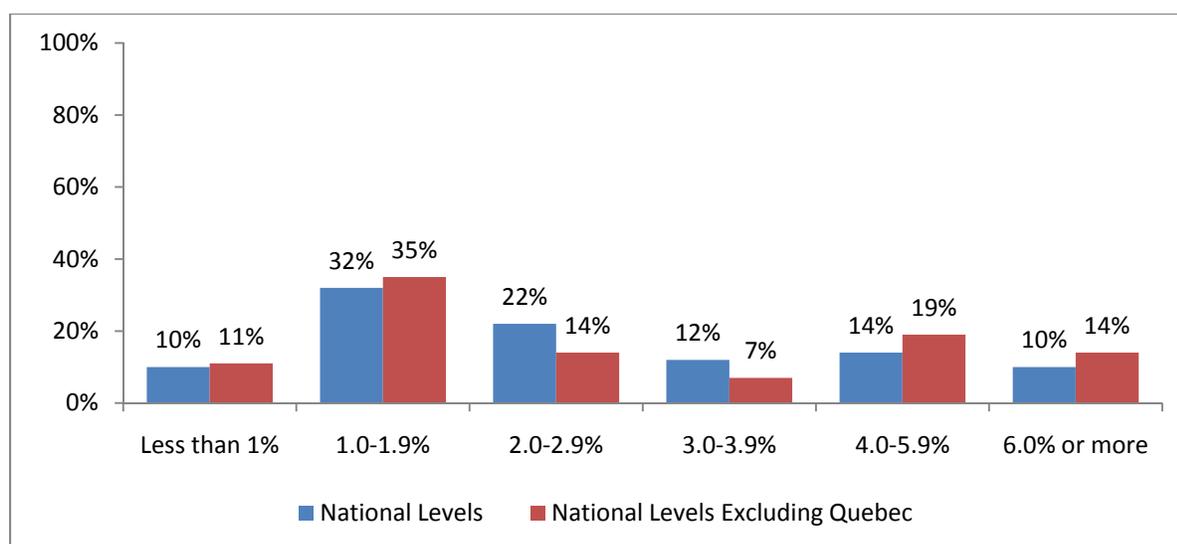
While the size of the firms had no impact on the perceived effectiveness of any of the training methods, the regional location of the firm had an impact on most of the methods. Both B.C. and the Prairie region felt that training provided by suppliers and equipment manufacturers (B.C.=2.65; Prairies=2.89)(see Table C-18) and training provided by third parties (Prairies=2.43; B.C.=2.59)(see Table C-19) were less effective than did employers in other regions of the country. Additionally, the perceived effectiveness of e-learning as a training method was highest in Ontario (2.84) and Quebec (2.70)(see Table C-20). Thus, even though Quebec firms were less likely to support e-learning than firms in other regions, those that utilized it felt it was relatively effective.

4.5 Role of CPSC and Other Stakeholders in Addressing Training Barriers and Challenges

Plastics employers were somewhat reluctant to provide training. As noted earlier, some employers reported that it was not uncommon for trained employees to leave their employer after they had received training. In addition, negotiating the challenges inherent in accommodating schedules and project timelines necessitated that training be afforded lesser priority relative to production demands of firms. Despite these challenges, a sizeable proportion of survey respondents noted that their firm allocated a percentage of their revenue stream to employee training (see Chart 4-15).

Since Quebec firms are obligated to spend at least 1% of their budget on employee training, the inclusion of Quebec firms in the above analysis may positively skew the results, i.e. showing that more money is spent on training. As such, Chart 4-15 shows the breakdowns for training budgets survey respondents nationally and excluding Quebec firms. While the results of these two analyses show some differences, these differences are not large and overall pattern of employer spending is similar. Thus, the remaining analyses of training budgets keep Quebec in the dataset.

Chart 4-15
Percentage of Gross Annual Revenue Spent on Employee Training

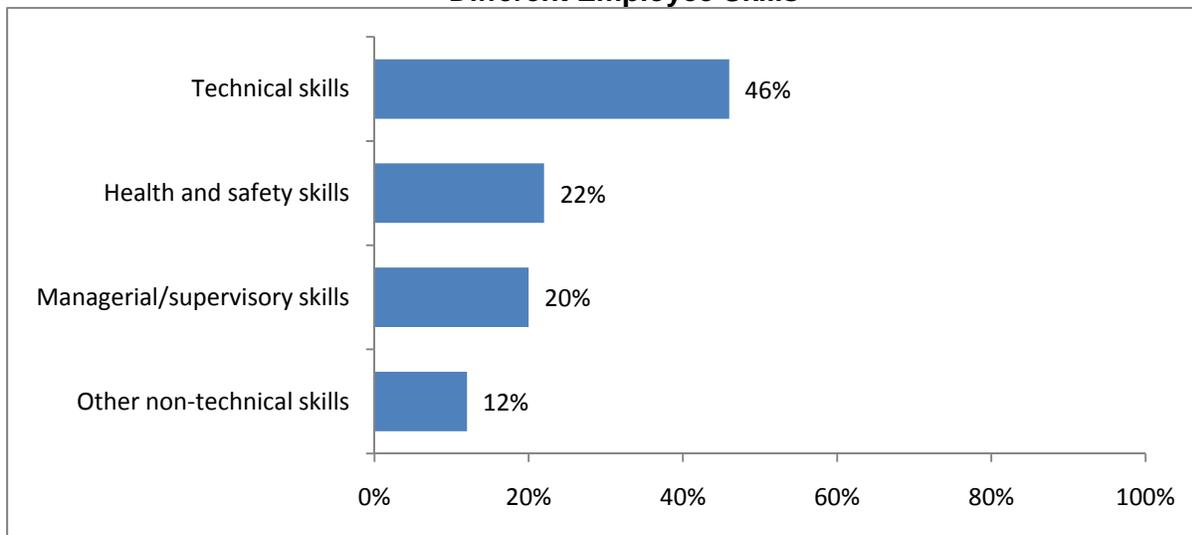


N=100 (National) N=70 (Excluding Quebec); Excludes Don't Know/No Response
Reference: Employer Survey C2

The average percentage of gross revenue reported being spent on employee training was 3%. However, the percentage was notably higher for micro firms (6.0%) than for larger firms (see Table C-21). As stated earlier this higher percentage could reflect the inability to achieve economies of scale in the provision of employee training among smaller firms. With employee training being split among fewer employees, the relative cost per employee rises.

As shown in Chart 4-16, the bulk of the company funding for employee training was directed to the development of technical skills (46%). However, there are still other non-technical skills that require training support as well. This was particularly evident among large firms, who spent a greater proportion of their training budget on managerial/supervisory (39%) training than did smaller firms (see Table C-22).

Chart 4-16
Average Proportion of Training Funds Spent on Development of
Different Employee Skills



N=101; Excludes Don't Know/No Response
 Reference: Employer Survey C3

Although plastics firms tend to dedicate some funding for training, it was widely noted among focus group participants and key informants that the industry was unable to cover the entire expense. The cost of training was identified as the second biggest barrier to training by 21% of survey respondents (See Chart 4-5). In addition, the absence of external funding was noted by 36% of survey respondents (see Chart 4-4). It was commonly stated by both key informants and focus group participants that the government and other stakeholders need to play a more prominent role in the provision of training within the plastics sector.

A range of suggestions as to how government could contribute were mentioned, including:

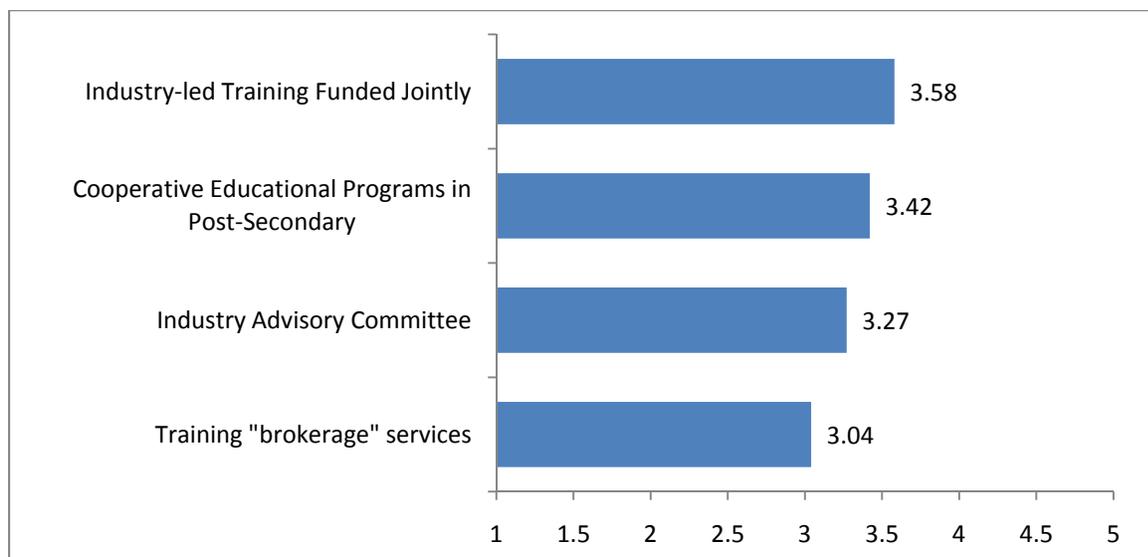
- Grants to individuals seeking plastics training;
- Tax incentives for firms who provide training;
- Subsidize the costs of employee training.

In addition to subsidizing the cost, there was no consensus as to how the government should be approached to assist in the cost of employee training.

In addition to financial assistance for employee training, key informants and focus group participants noted that external support was required in the coordination and provision of training. Informants frequently expressed that the focus of plastics employers is on the survival of the company. With increasing competitiveness, proprietary processes, and the economic slowdown, firms are hampered in their ability to coordinate efforts to address the industry's training needs. The narrow focus prescribed by this environment undermines a firm's capacity to embrace the strategic training needs of the industry. As such, it was suggested that an external agency or association is necessary to bridge the differing perspectives of individual firms.

Survey respondents were asked to indicate the extent to which they would support one of four potential options to coordinate the provision of training across the industry. As seen in Chart 4-17, respondents were amenable to all options. This finding supports the perceptions of the key informants and focus group participants that an external body is needed to provide guidance for plastics training. Given, however, that the top three options all feature industry involvement, it would appear that, while recognizing the need for a neutral, representative body to coordinate training, firms feel a strong requirement for an industry presence in determining how training is provided. This finding supports the perceptions of key informants, discussed earlier, that current training offered is too broad, requiring specific hands-on training within the firm to supplement employee skills.

Chart 4-17
Available Support for Training Options*



N(Industry-led Training Funded Jointly)=166, N(Cooperative Educational Programs in Post-Secondary)=165, N(Industry Advisory Committee)=165, N(Training Brokerage Services)=158, Does not include "don't know"

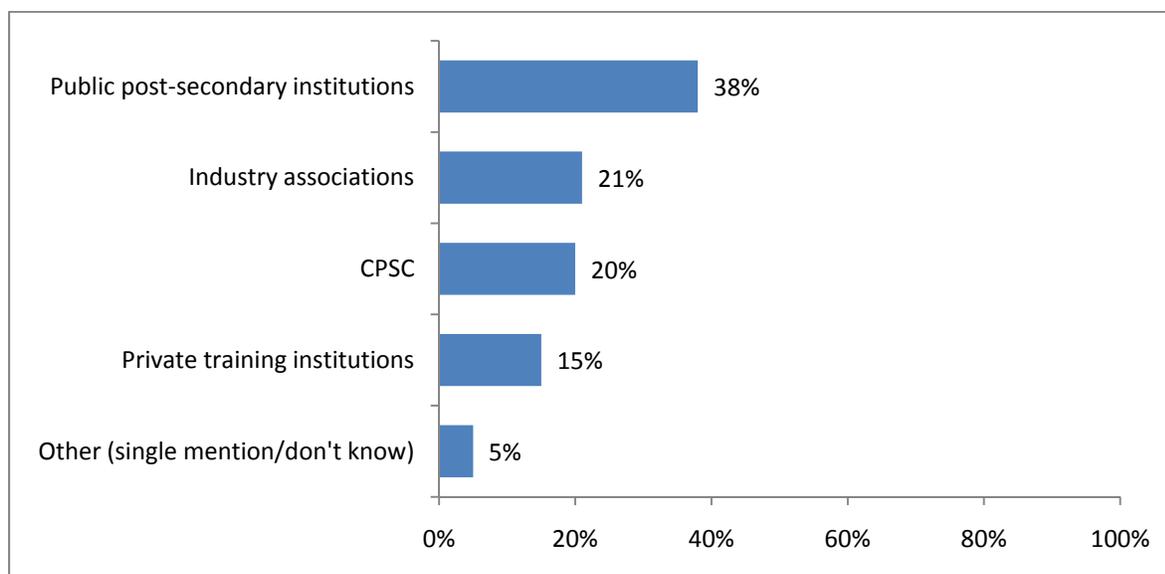
Reference: Employer Survey D4

* Numbers represent average score of respondents on a scale from 1=Very unsupportive at all to 5=Very supportive, therefore higher scores indicate greater support for the training option.

* Excludes "don't know"

Survey respondents were also asked who should provide the training. As shown in Chart 4-18, there was a diversity in responses with the most common choice, public post-secondary institutions, being selected by 38% of respondents. Thus, while there was consensus regarding the need for an external organization to coordinate and arrange training within the industry, there was less agreement about the service provider. This particular diversity of opinion is another indicator of the unique training needs required by individual firms, and prompted one key informant to suggest that training providers should partner with equipment manufacturers to develop programs that are more relevant to company needs.

Chart 4-18
Preferences for Training Providers



N=175

Reference: Employer Survey D6

Key informants were asked what role the CPSC should play in providing training within the industry. The most supported position was that of a clearinghouse for best practices, would allow firms to use CPSC as a one-stop shop to access resources. A couple of informants noted that this service would be of greater value if the CPSC were able to rank or recommend certain programs over others. One informant suggested this ranking could be achieved by having employees peer review recently completed programs. Regardless, having a compendium of training practices and programs was viewed as a useful strategy for addressing industry needs.

There was slightly less support expressed for having the CPSC develop in-house training materials, which could then be offered to plastics companies. While some informants stated that the CPSC had access to various training materials and should leverage this access to meet industry needs, other informants were cautious about the efficacy of these materials. Given the perception that hands-on-nature training is needed within the industry, some informants did not think CPSC developed materials would address required skills. Focus groups participants tended to agree, as they felt that CPSC materials would only assist introductory skills. Therefore, as the industry must aspire to more advanced skill levels in order to remain viable, it was uncertain how well in-house materials would meet the current gaps in skill across in the industry.

It was also noted that CPSC could also fill a role in terms of coordinating or “brokering” training needs among small to medium-sized employers. In this context, the CPSC could serve as a central agency through which employers could communicate their training needs, and CPSC could identify employers with common training needs and link such employers with available training providers.

SECTION 5: CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis of the data collected for this study, the consultant has provided several recommendations to address training and skill gaps within the plastics industry.

5.1 Promote the Development of Training Partnerships

Research participants generally felt that there was a need for an external organization to coordinate and arrange training opportunities within the industry, as individual firms do not have the time or resources to develop a comprehensive training strategy. In addition, firms are focused on their own viability and particular training needs, lacking the broad perspective needed for an industry-wide strategy. Finally, respondents noted a level of suspicion in coordinating training efforts with other firms. Given the competitive nature of the sector, it was noted that firms may be unwilling to participate in joint training programs for fear that such participation could jeopardize their competitive advantage(s).

For these reasons, the CPSC should lead the development of training partnerships both among firms and between plastics companies and external training organizations. Given the diverse training needs and resources across the country, the CPSC may need to vary its role according to region. On the national level, the CPSC should continue to maintain a dialogue with post-secondary training institutions. This continued communication should address programs offered by training institutions, the success of those programs, and any additional capacities within the institutions. The CPSC should also continue to provide information about the changing training needs of the plastics industry to post-secondary institutions, as well as the possible roles that the institutions might be able to fill. While in the past, post-secondary education institutions eliminated formal plastics training due to the lack of demand, information obtained during this research suggests that the sector is supportive of such training, provided that such training better reflects the current needs of employers. In addition, given the impending mass retirement likely in the sector, there will be considerable demand to have greater numbers of trained new entrants.

In addition to fostering dialogue with post-secondary training institutions, the CPSC can assist plastics firms in developing regional advisory committees to augment local training needs. The CPSC can also investigate the development and maintenance of other manufacturing channels and initiate a list of suggestions, best practices, and lessons learned, which can be accessed by regional groups of plastics employers. In some cases, the CPSC may need to act as an advisor to firms developing local training programs and connect employers with similar training needs or to private or public training providers. It may also be necessary for the CPSC to approach companies to determine their interest and identify their ability to participate in advisory committees developing training solutions for their employees. The CPSC can promote the benefits of skills development and training to employers and employee groups within the firms.

5.2 Develop a Plastics Training Curriculum

Given the national scope of the plastics industry and the specialized focus of individual firms, the CPSC is needed to develop an appropriately broad-based training curriculum. The particular manufacturing processes and/or machines used by individual firms generate very specific training requirements. As such, it is widely felt that any training provided to new employees must be supplemented by on-the-job training. In spite of this, there are general, generic skills that would assist new employees working in plastics companies. The CPSC should work with plastics firms to delineate those skills broadly felt to be essential to working in the industry.

Based on those key skills, the CPSC could work in conjunction with plastics trainers to develop an occupation focused curriculum. This curriculum should be designed to offer benefits to all plastics companies. The CPSC could then provide this curriculum to potential training institutions to act as a template for the development of training courses and/or programs.

Where sufficient interest and demand exists, the CPSC could also work with plastics firms to develop more specialized modules to address specific processes within the industry, e.g. blow mould injection, plastics extrusion, etc. The focus should be in designing training that broadly addresses the needs of industry rather than focusing on the specific requirements of individual firms. The curriculum could be provided to training institutions or to firms as a guideline to plastics training within the industry.

5.3 Develop Best Practices for Hiring Foreign Workers

Many of the informants reported that foreign workers were increasingly being used to meet the labour needs of the industry. While these workers were able to address the labour needs of companies, they created additional training needs. Cultural and language barriers were often reported as issues that needed to be addressed. As the reliance on foreign workers within plastics increases, there is a growing need for language and cultural training. The CPSC could provide guidance on how to provide this training and other activities or programs that could be developed to facilitate the effective integration of foreign workers into the plastics sector.

The CPSC can liaise with other agencies that work with immigrants to develop recommendations, best practices, and lessons learned when working with foreign workers. Additionally, the CPSC can compile experiences and success stories from plastics firms that have incorporated foreign workers into their workforce. Suggestions can include materials that managers can use to better understand the needs of foreign workers, links to organizations that provide language training, links to cultural community centres/associations to provide support for foreign workers, and other materials that plastics firms can use to better understand and address the unique needs of foreign workers. Providing this information can both assist plastics firms currently utilizing foreign workers and encourage other firms to look to foreign workers as a means of addressing labour shortages.

5.4 Maintain Online Inventory of Current Training Opportunities

The CPSC can assist firms seeking training for its employees by maintaining an online inventory of current training programs available. This approach would allow firms to seek out training programs with greater ease. Rather than having to search for programs or training institutions, the CPSC would act as a one-stop shop, listing all of the programs currently available. Where possible, the inventory should offer details about the course outline and usage.

It would be important that this inventory be continually updated to reflect current information. The CPSC can partner with trade journals, e.g. Canadian Plastics, and associations like the Canadian Plastics Industry Association, to ensure the inventory reflects the most current list of available training opportunities.

Finally, the CPSC could enhance the value of this inventory through additional complementary training opportunities within the manufacturing sector. The CPSC could create a series of training programs that meet the need of the plastics industry or fulfil the National Occupational Standards associated with plastics workers. Where this is not possible, the inventory should, at a minimum, offer a forum setting where plastics employers and employees have the option of providing feedback concern the utility of specific programs.

5.5 Include Industry Representatives in the Development of Training Strategies

Plastics employers expressed a strong desire to have a voice in the training that is provided to their employees. Employers tended to feel that their training needs were unique and needed special attention to develop appropriate programs. This was evident in the reported need by informants to provide additional, factory-specific employee training to graduates of plastics training institutions. Finally, it was highlighted by the common preference for industry-led or industry-partnered training strategies. The development of any training plans, strategies or programs should, therefore, include the active participation of industry leaders. Industry participation can take the form of advisory committees that could:

- Outline specific training needs and gaps;
- Develop solutions/strategies to provide training;
- Review proposed training programs/curricula;
- Assist in the implementation of training opportunities; and
- Promote/support developed training solutions.

It is imperative that industry representatives be included in all stages of the development of training strategies. Industry involvement will help to ensure that training programs address their needs and are offered in an appropriate manner. Additionally, involving industry leaders will also increase their “buy-in” for proposed solutions. As it has been observed through the cancellation of plastics training programs in public schools and other institutions – it is important for the industry itself to support a training development strategy and promote the use throughout their channels and networks.

5.6 Improve Understanding of the Benefits of E-learning

The use of e-learning shows promise as a tool for introductory instruction into plastics. E-learning offers a low cost option for providing new employees' basic theory and understanding of plastics manufacturing and processing. Additionally, e-learning affords the opportunity for advanced instruction in plastics that is difficult to provide on factory floors, e.g. how to disassemble and reassemble production machinery. While not a panacea for the training needs within the plastics industry, e-learning can make a valuable contribution to the development of employee skills. It can also include specific application in terms of supervisory and management training.

However, despite the contribution that e-learning could provide to plastics employers, it has not achieved a great amount of support. Plastics employers continue to emphasize the importance of hands-on learning within the industry, however they also report on the lack of theoretical knowledge of plastics. It was felt that in order for employees to understand the manufacturing process better, a greater understanding of the underlying principles of plastics needed to be developed by employees. E-learning offer employers a low-cost option for providing that training at a pace dictated by the employee.

The CPSC needs to promote the potential benefits of e-learning within the industry. This promotion needs to both outline the benefits inherit in e-learning, while acknowledging its limitations. E-learning will not replace the need for hands-on, practical training, but can play a significant role in both employee and management level training.

APPENDIX A – DATA COLLECTION TOOLS EMPLOYER SURVEY



2009 Canadian Plastics Sector Labour Market Study

Your information will help us to provide data to the plastic sector that is unique and not available from other sources. Thank you for your involvement in this important survey!

Objectives of the Survey: To develop an understanding of current human resources issues and training needs in the plastics sector. The data collected will support the development of strategies to optimize training, apprenticeship and capacity building programs.

Confidentiality: The results of the survey will be reported in aggregate form only; no individuals or organizations will be identified in any report.

Sponsor of the Research: The Canadian Plastics Sector Council (CPSC) in conjunction with Human Resources Development Canada (HRDC). The CPSC is a national not-for-profit association created to explore and address emerging human resources issues in the plastics processing industry. The Council is a partnership of employers and employees in the industry.

Questions or Concerns: If you have any questions about the questionnaire or the research in general, please call the survey coordinators at **1-877-665-6252** (English) or **1-888-689-1847** (Français).

How to respond: You have a number of options for returning your survey by March 24, 2010:

- **by mail using the enclosed postage-paid envelope**
- **by fax toll-free at 1-866-448-9047**
- by going **online** to www.cpsc.malatest.net
- **by phone using either of these two toll-free numbers**
1-888-247-6465 (English) or 1-877-688-5051 (Français).

Why complete: To help ensure programs and services are tailored to you needs. You will also be entered for a

To update the CPSC database of plastics employers, please provide the name and job title of the person filling out this survey. The information in this section will not be tied to the responses in the questionnaire:

Name: Mr. Mrs. Ms. Dr. (First) _____ (Last) _____

Job Title: _____

Company name: _____

Company address: _____

(City) _____ (Province) _____ (Postal Code) _____

SECTION A: ABOUT YOUR COMPANY

A1. Is your office a branch or head office?
(Please check only ONE option)

- Head Office
- Branch Office If a branch, in what province is your head office located?

A2. What is your organization’s scope of operations?

- Local
- Provincial
- Regional (more than one province, but not national)
- National
- International

A3. How many employees does your organization employ in total?

- Less than 5
- Between 6 to 100
- Between 101 to 500
- More than 500

A4. In what business line of the plastics processing industry is your organization (Check all that apply)?

- Transportation (e.g. automotive, aerospace, boat building etc.)
- Packaging
- Construction & building materials
- Consumer products (e.g. electronics, toys, other)
- Other: _____

SECTION B: HIRING PRACTICES

B1a. Prior to the economic downturn (3-5 years ago), to what extent was staff turnover been an issue for your business?

Not at all an issue					A major issue	Don't Know
1	2	3	4	5		<input type="checkbox"/>

B1b. During the economic downturn (past 2 years), to what extent has staff turnover been an issue for your business?

Not at all an issue					A major issue	Don't Know
1	2	3	4	5		<input type="checkbox"/>

B2a. To what extent do you foresee labour shortages will be an issue for your business in the next 1 to 2 years?

Not at all an issue					A major issue	Don't Know
1	2	3	4	5		<input type="checkbox"/>

B2b. To what extent do you foresee labour shortages will be an issue for your business in the next 3 to 5 years?

Not at all an issue					A major issue	Don't Know
1	2	3	4	5		<input type="checkbox"/>

B3a. Have you experience difficulties or delays in recruiting new employees?

- Yes (go to next question)
- No (skip to question B4)
- Don't know (skip to question B4)

B3b. Were these difficulties or delays related to recruiting ...

Unskilled workers?	Skilled Workers?
<input type="checkbox"/> Yes	<input type="checkbox"/> Yes
<input type="checkbox"/> No	<input type="checkbox"/> No
<input type="checkbox"/> Don't know	<input type="checkbox"/> Don't know

B4. Have you ever hired candidates with ...

a. No Training in Plastics? <input type="checkbox"/> Yes	b. College/CEGEP Plastics training? <input type="checkbox"/> Yes (go to next question)	c. Other post-secondary technical training in Plastics? <input type="checkbox"/> Yes (go to next question)
<input type="checkbox"/> No	<input type="checkbox"/> No (skip question B5a)	<input type="checkbox"/> No (skip question B5b)
<input type="checkbox"/> Don't know	<input type="checkbox"/> Don't know (skip question B5a)	<input type="checkbox"/> Don't know (skip question B5b)

B5. How would you rank the plastics training received at the ...

a. College/CEGEP? <input type="checkbox"/> Poor <input type="checkbox"/> Inadequate <input type="checkbox"/> Satisfactory <input type="checkbox"/> Good <input type="checkbox"/> Excellent	b. Other post-secondary technical training institute? <input type="checkbox"/> Poor <input type="checkbox"/> Inadequate <input type="checkbox"/> Satisfactory <input type="checkbox"/> Good <input type="checkbox"/> Excellent
---	---

SECTION C: CHALLENGES AND TRAINING BARRIERS

C1. Which of the following are issues for your organization with respect to employee training (select all that apply):

- a. Having skilled workers to complete work
- b. Retaining staff
- c. Production of quality products
- d. Improve worker productivity
- e. Reduction of waste product
- f. Certification requirements
- None of the above

C2. Approximately what percentage of your company's/organizations gross annual revenue would you say is reinvested in employee training? (Please provide an estimate if unsure) – *Dependent on feedback from focus groups and KII's*

_____ %	Don't know/No response <input type="checkbox"/>
---------	---

C3. What proportion of the training that you have supported was for upgrading skills/knowledge in the following areas?

Technical skills (e.g. how to use equipment, materials, etc.)	(A)
Health and safety skills	(B)
Managerial/supervisory, team building, communication skills	(C)
Other non-technical skills (e.g. accounting, literacy, etc.)	(D)
Total	100% (A + B + C + D)

C4. Which of the following are barriers to your organization supporting plastics related employee training? (select all that apply)

- Lack of plastics-related training programs available
- Too few staff to allow workers to take time off work to receive training
- Employees are not interested in taking training or upgrading their skills
- Insufficient staff to provide in-house training
- Too few skilled plastics workers to supervise new/unskilled workers
- No space or infrastructure to offer training in-house
- Lack of union or association-supported training in your area
- Lack of funding for training from sources other than your company (e.g. federal and provincial programs, unions, industries, etc.)
- Loss of revenue when workers are away at training
- Working around a shift structure in a 24-hour work environment
- None of the above

C5. What is the biggest barrier your organization faces in providing training in the plastics sector?

SECTION D: TRAINING FOR THE PLASTICS SECTOR

For the purpose of this survey, please frame your responses in terms of plastics processing employees only.

D1. Based on your experience, are the following types of training or skills effective in terms of increasing your employees' skills and knowledge relevant to the plastics processing sector?

	Not effective at all		Very effective			Don't know
On-the-job training (e.g. job-shadowing, mentoring, etc.)	1	2	3	4	5	<input type="checkbox"/>
In-house formal training (i.e. provided by your company.) ⁽¹⁾	1	2	3	4	5	<input type="checkbox"/>
Training provided by suppliers and equipment manufacturers	1	2	3	4	5	<input type="checkbox"/>
Training provided by third party companies that specialize in the provision of plastics training	1	2	3	4	5	<input type="checkbox"/>
Initiate trade and vocational training preparation in secondary schools (high school)	1	2	3	4	5	<input type="checkbox"/>
E-learning (e.g. training completed on-line, through e-mail or a CD-ROM, webinar, etc.)	1	2	3	4	5	<input type="checkbox"/>
Other: _____	1	2	3	4	5	<input type="checkbox"/>

⁽¹⁾ Formal training is defined as training that has a pre-determined format or a pre-defined objective, that has a specific content, or for which progress may be monitored and/or evaluated.

D2. During the last 12 months, has your organization supported (i.e. paid for or provided) some job-related training for employees through any of the following methods or through any of the following types of training or skills upgrading?

	Yes	No
Allowed for time off work to attend training	<input type="checkbox"/>	<input type="checkbox"/>
Offered salary incentives/bonuses for completing training	<input type="checkbox"/>	<input type="checkbox"/>
Supported <u>on-the-job</u> training (e.g. job-shadowing, mentoring, etc.), excluding apprenticeship training	<input type="checkbox"/>	<input type="checkbox"/>
Supported <u>in-house formal</u> training ⁽¹⁾ (i.e. provided within your company)	<input type="checkbox"/>	<input type="checkbox"/>
Provided e-learning training (e.g. training completed on-line, through e-mail or a CD-ROM, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____	<input type="checkbox"/>	<input type="checkbox"/>

⁽¹⁾ Formal training is defined as training that has a pre-determined format or a pre-defined objective, that has a specific content, or for which progress may be monitored and/or evaluated.

D3. Have you used external programs or resources to train or upgrade employees skills?

- Yes
- No
- Don't know

D4. We are interested in training development opportunities that could be introduced to better support the Plastics Sector. On a scale of 1 to 5, with 1 being Very Unsupportive and 5 being Very Supportive, please indicate your support for potential training strategies that may be pursued by the sector.

Training Options	Very Unsupportive		Very Supportive			Don't Know
	1	2	3	4	5	
Development of industry-led training/upgrading programs to be co-funded by employers, employees and government	1	2	3	4	5	<input type="checkbox"/>
Increased emphasis on co-operative education programs by private and public training institutions	1	2	3	4	5	<input type="checkbox"/>
Establishment of a training "brokerage" service where employers can jointly purchase required training	1	2	3	4	5	<input type="checkbox"/>
Establishment of an Industry Advisory Committee to advise provincial post secondary institutions on training needs of the sector	1	2	3	4	5	<input type="checkbox"/>

D5. Do you believe that an apprenticeship training program would be appropriate for the next generation of plastics workers?

- Yes
- No
- Don't know

For the next 3 questions we would like to understand how your organization would ideally like plastics training to be delivered, who should deliver such training and what the training should focus on.

D6. Assuming that training for the plastics sector was provided by a external organization, who do you think would be best able to provide this training?

- Industry association
- Unions or employee associations
- Public post-secondary institutions (e.g. colleges, CEGEP)
- Private training institutions/providers
- Canadian Plastics Sector Council
- Other (please specify): _____

D7. What delivery methods would you prefer to use to receive training? Assuming that all of these methods were available please select up to three (3) methods that you would prefer were available?

(Select 3 only)

- ___ On-the-job training (informal training by co-workers or supervisors at the worksite)
- ___ Formal in-house training provided by the company
- ___ Formal in-house training provided by an external trainer
- ___ Short focused course off-site at training or educational facility
- ___ After-hours (e.g., evenings or weekends) continuing education course
- ___ Full-time program (e.g., certificate, diploma, degree that is more than 7 days in duration)
- ___ Apprenticeship
- ___ E-learning course (e.g., course taken over the internet or via email)
- ___ Distance learning (e.g., correspondence courses, or those offered through TV broadcast (not E-learning))
- ___ Other (please specify): _____

D8. What would be your organizations preferred focus of employee training to meet your current needs?

Technologies

- | | | |
|--|--|---|
| <input type="checkbox"/> Injection Moulding | <input type="checkbox"/> Profile Extrusion | <input type="checkbox"/> Pattern & Mould Making |
| <input type="checkbox"/> Blow Moulding | <input type="checkbox"/> Film Extrusion | |
| <input type="checkbox"/> Rotational Moulding | <input type="checkbox"/> Composites | |
| <input type="checkbox"/> Thermoforming | <input type="checkbox"/> Other (please specify): _____ | |

Technical Skills

- | | |
|---|--|
| <input type="checkbox"/> Machine Operation | <input type="checkbox"/> Quality Assurance |
| <input type="checkbox"/> Machine Set-up | <input type="checkbox"/> Quality Control |
| <input type="checkbox"/> Machine Maintenance | <input type="checkbox"/> Plastics Process Technician |
| <input type="checkbox"/> Material Handling | <input type="checkbox"/> Lab Technician |
| <input type="checkbox"/> Plastic Part or Mould Design | <input type="checkbox"/> Other (please specify): _____ |

Non-technical Skills

- | |
|--|
| <input type="checkbox"/> Supervisory/Management |
| <input type="checkbox"/> Logistics/Purchasing |
| <input type="checkbox"/> Accounting/Book keeping |
| <input type="checkbox"/> Sales/Marketing |
| <input type="checkbox"/> Other (please specify): _____ |

**THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY.
PLEASE FAX THE COMPLETED SURVEY (TOLL-FREE) 1-866-448-9047, BY APRIL 30, 2010.**

PLEASE MAKE SURE TO INCLUDE ALL PAGES WHEN FAXING – THANK YOU.

*****If you want to be entered into the draw for the Acer Netbook, please fill out the information below.*****

This information will ONLY be used for the purposes of this draw.

Name: _____

Telephone Number: _____

Email Address: _____

Key Informant Interview Guide



**TRAINING NEED ANALYSIS FOR THE CANADIAN PLASTICS SECTOR
KEY INFORMANT GUIDE**

Name:
Date and Time:
Phone:
5.6.1.1.1 In-Person/Telephone:

LDER INTRODUCTION

The *Training Need Analysis for the Canadian Plastics Sector* is a project being undertaken by R.A. Malatest & Associates Ltd. for the Canadian Plastics Sector Council. The project will help to guide the plastics sector in planning initiatives to address the industry’s human resources and training needs. The study will identify existing gaps and needs in the industry, and make recommendations for future human resources and training actions for the industry.

An important part of this study is obtaining feedback and perspectives of key stakeholders from across Canada in the plastics manufacturing sector.

Please note that the data obtained from the interviews will remain strictly confidential and be treated in accordance with Canadian privacy protection laws. Individual responses will be collected and analyzed by R.A. Malatest & Associates Ltd. and only the summarized information will be provided to the CPSC.

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SECTION A: STAKEHOLDER INFORMATION

A1. What is your role(s) within the plastics manufacturing sector?

<input type="checkbox"/>	Industry employer/owner/president
<input type="checkbox"/>	Industry human resources/operations/employee manager
<input type="checkbox"/>	Business/professional association stakeholder
<input type="checkbox"/>	Educator/training provider or representative (including apprenticeship)
<input type="checkbox"/>	Other, Please specify: _____

A2. What areas of the plastics manufacturing sector industry are you familiar with (i.e., mould making, etc)?

SECTION B: SKILLS AND TRAINING GAPS

B1. Currently, what are the skill gaps in the plastics manufacturing sector? Specifically, what, if any, are the gaps/weaknesses in each of the following areas:

a) Technical skills (i.e. relating to machine operation, mould making, etc.)

Don't know/No response

b) Management skills (i.e. supervisory skills, human resources skills)

Don't know/No response

c) Research skills

Don't know/No response

d) Others (i.e. soft skills such as communication skills, customer service; basic skills such as language comprehension, reading, etc.)

Don't know/No response

B2. What occupations/roles are most affected by skill gaps in the industry?

Don't know/No response

B3. For each area identified as having skill gaps, does effective training to address these skill gaps currently exist? If not, what type of training would be most appropriate?

a) Technical skills (i.e. relating to machine operation, mould making, etc.)

Don't know/No response

b) Management skills (i.e. supervisory skills, human resources skills)

Don't know/No response

c) Research skills

Don't know/No response

d) Others (i.e. soft skills such as communication skills, customer service; basic skills such as language comprehension, reading, etc.)

Don't know/No response

B4. Please provide any examples of training practices/programs/delivery methods that you think could serve as models/examples of "best practices" for the industry?

Don't know/No response

B5. Overall, what do you see as the greatest issues facing the industry with respect to training (i.e., work-based, industry-based, and institutional)?

Don't know/No response

B6. How can these barriers be overcome, in your opinion?

Don't know/No response

B7. Is there sufficient promotion of the sector and its training programs to attract new entrants? What is currently being done in this area?

Don't know/No response

SECTION C: ROLES OF STAKEHOLDER GROUPS IN INDUSTRY TRAINING

C1. *Please describe the role you think that each of the following stakeholder groups should take in supporting training in the industry? Please comment on the extent to which this is currently being filled.*

a) Educational institutions

Don't know/No response

b) Private training organizations

Don't know/No response

c) Manufacturers

Don't know/No response

d) Vendors/distributors

Don't know/No response

e) Unions

Don't know/No response

f) Others

Don't know/No response

C2. *What do you see as the role of the Canadian Plastics Sector Council in terms of helping to ensure appropriate training is available to train new workers as well as to upgrade the skills of existing workers (re-training)? Please comment on the appropriateness of the following options:*

a) That the CPSC serve as a “clearinghouse” for best practices in terms of training (i.e. offer on-line resources, library, listings, etc).

Don't know/No response

b) That the CPSC serve as an advocacy agent to encourage existing training institutions to develop courses/programs.

Don't know/No response

c) That the CPSC develop in-house courses/programs that can be offered either on-line, via mobile education, or in traditional classroom settings (targeting skill upgrading). Essentially, CPSC would become a training provider.

Don't know/No response

d) Other role(s) for CPSC?

Don't know/No response

C3. *Are there any current gaps or problems in terms of coordination/networking (between industry companies, industry associations, educational institutions, etc.) in the industry that would affect training?*

Don't know/No response

C4. *What, if any, are the barriers that prevent/limit companies from establishing partnerships with stakeholders such as other companies/organizations, unions, training centres or educational institutions, etc.?*

Don't know/No response

SECTION D: PLANNING FOR TRAINING IN THE FUTURE

D1. Are there any changes to the industry that you foresee will require changes to training in the next five years?

Don't know/No response

D3b. What could be done to better prepare the industry for these training challenges?

Don't know/No response

SECTION E: OTHER HUMAN RESOURCES / TRAINING ISSUES

E1. Beyond training and skills, what other major human resources issues, if any, are affecting the plastics manufacturing industry?

Don't know/No response

THANK YOU FOR TAKING PART IN THIS IMPORTANT RESEARCH.

Focus Group Guide

Introduction: 10 Minutes

Welcome! My name is _____. I work at R.A. Malatest & Associates Ltd. I would like to thank you all for participating in this evening's focus group. We are conducting this focus group on behalf of our client, the Canadian Plastics Sector Council.

I would like to take a little time to explain how we will proceed with the discussion:

- The focus group should take about **two hours**. We can take a short break about half way if it is felt to be needed.
- The discussion will be audio-taped to ensure the accuracy of the information reported. The recording equipment is [equipment location – tape-recorder].
- Your participation in this discussion is strictly voluntary. If you choose not to participate, it will not affect you in any way.
- Anything you say will remain confidential – that is, your name will not be associated with anything you say.
- I would like to point out that there are no right or wrong answers and that we are not trying to reach a group consensus or agreement. In fact, it is especially important to hear your views if they are different from most other people in the group.
- It is important that everyone have a chance to talk and express their opinion about the topics being discussed. Everyone should feel free to make comments they feel are relevant to the discussion at hand. I would just ask that people talk one at a time and try not to interrupt another person. This will make it easier to follow the discussion and will make listening to the playback of the audio-tape much easier as well.

My main role this evening is to keep the discussion on track and ensure that everyone has a fair chance to contribute to the discussion. Since I do not work in the Plastics Sector, I may not be able to answer all of the specific questions that you may ask. However, I have been involved as one of the primary researchers in the recent *Training Needs Analysis for the Canadian Plastics Sector*.

Any questions before we begin?

This study is being conducted on behalf of the Canadian Plastics Sector Council. The Canadian Plastics Sector Council (CPSC) is a national not-for-profit association created to explore and address emerging human resources issues in the plastics processing industry. Established through the Sectoral Partnerships Initiative program of Human Resources Social Development Canada (formally Human Resources Skills and Development Canada), the Council is a partnership of employers and employees in the industry.

Information collected in our discussion will help the CPSC understand the current gaps and needs that exist in the training of the plastics workforce. We are interested in addressing current gaps, potential challenges, and possible solutions to the provision of employee training within the plastics industry.

Before we start, I would like to go around the table and have everyone introduce themselves and provide a little bit of background about what they do in the plastics industry.

- First name only.
- Company/Firm name.
- Size of firm (number of employees).
- Types of products produced by company.
- Length of time in the industry (individual and company)

Current Training Needs: 45 Minutes

Reflecting over your human resources needs for the last six months, I would like to think about any skill shortages you may have experienced with your employees.

1. a) Are there any particular types of skills that are especially in need? Please provide specific examples. [write different skills on whiteboard]

Group skills into the broader categories below:

- Technical (machine operation, material handling, mould making)
- Management skills (supervisory, human resources)
- Research skills (material knowledge, plastics processing)
- Soft skills (communication, customer service, basic language).

- b) Can you think of any reasons why these skills are lacking the in the industry workforce?

Possible reasons (begin reading if necessary to get discussion started):

- Lack of general education
- Lack of plastics training
- Lack of experience
- Lack of training opportunities

- c) What sort of training do you think would be needed to address these gaps? [write different types of training on whiteboard]

Different types of training (begin reading if necessary to get discussion started):

- On-the-job training
- Formal training (classroom setting)
- Practical training (trades classes)
- E-learning
- Mentoring
- Apprenticeships

2. What sorts of benefits do you hope to gain by training your workforce? [Write responses on whiteboard]

Potential benefits (begin reading if necessary to get discussion started):

- Improve worker productivity
- Increase worker quality
- Reduction in production waste
- Decrease in machine downtime
- Increased understanding of the production process
- Improved worker innovation
- Improved employee morale
- Enhance employee retention/loyalty

Ensure that all benefits are mentioned (bring up ones that are not mentioned by the group).

3. What type of training do you provide to your workers? [write different types of training on whiteboard]

Different types of training (begin reading if necessary to get discussion started):

- On-the-job training
- Formal internal training program
- External training companies
- E-learning
- Mentoring
- Apprenticeships
- Provide time off for employees to attend training courses
- Pay for training courses
- Ensure that all types of training are mentioned (bring up training methods that are not mentioned by the group & ask if any of them have ever used them).

4. What is preventing you from providing more training opportunities to your workers?

Possible reasons (begin reading if necessary to get discussion started):

- Provide enough training already
- Lack of interest from employees
- Cost of training
- Inability to give workers time off
- Issues over who pays for training
- Concern over workers leaving after they are trained
- Lack of availability of training

Challenges:

20 Minutes

Like all manufacturing sectors, the plastics industry is undergoing constant changes and re-organizations. I would like everyone to think about current changes and potential future changes that are occurring in the plastics sector.

5. a) Given the changes occurring in the plastics sector, what new challenges is the plastics industry currently facing?

b) What future challenges do you think the plastics industry will have soon have to face (within the next 24 months)?

Potential challenges (begin reading if necessary to get discussion started):

- Increased global competition
- Increased automation of production process
- Development of new plastic resins
- Increasing pressure from environmental movement
- Lower demand for plastics (loss of key customers)
- Tight labour market

6. What impact do you think these challenges will have on the level of skills needed for plastics workforce? (go through the list of challenges)

7. Are there appropriate facilities to meet these training needs for employees?

Possible Solutions:

30 Minutes

For the final part of our discussion, I would like everyone to think back to the training needs and skill gaps that we have already discussed (review list generated from question 1a.). Additionally, we discussed challenges that are currently being faced by the plastics sector (review lists generated from questions 5a. and 5b.). In response to these needs and challenges, different training methods have been mentioned to address these needs and gaps (review list generated from question 1c.).

Given this combination of needs, challenges, and training methods, we would like to investigate deeper how you think training could best be provided to workers in the plastics industry.

8. Who should provide training?
 - Publicly funded institutes (colleges, CEGEP)
 - Employers
 - Industry associations
 - CPSC
 - Private companies

9. How much should the training cost? How should it be funded?
 - Tuition rates
 - Per course fees
 - Annual fee to employers (based on number of employees)

10. Who should pay for training?
 - Employers
 - Workers
 - Industry as a whole
 - Government

11. How long should training courses be?
 - Few days
 - Week or two
 - Few months
 - Year or longer

APPENDIX B – LITERATURE REVIEW REFERENCES

- A. Routsis Associates, Inc (no date). *What Managers Need to Know About Training Their Production Workforce: A Guide for Plastics Companies that are Serious About Developing a Fully Skilled Workforce.* <http://www.traininteractive.com/download/pdf/report.pdf> . Last accessed October 1, 2009.
- Australian National Training Authority (2002). *Factors Influencing the Implementation of Training and Learning in the Workplace.* National Centre for Vocational Research. <http://www.ncver.edu.au/research/proj/nr9013.pdf> . Last accessed October 1, 2009.
- Canadian Plastics Industry Association (2002). *The Saskatchewan Plastics Industry Study: Diversification in the Saskatchewan Economy.* http://www.aeel.gov.sk.ca/adx/asp/adxGetMedia.aspx?DocID=596,195,178,169,94,88,Documents&MediaID=360&Filename=spp_plastics_industry.pdf&I=English . Last accessed September 29, 2009.
- Cullins, James G., Sawzin, Steven, Sisson, Gary R., & Swanson, Richard S. (1976). *Training, what's it worth.* *Training and Development Journal*, 30, 12-20.
- Goldsberry, Clare (September 15, 2009). *Want good products and processes? Train good employees.* *Modern Plastics Worldwide.* <http://www.plasticstoday.com/mpw/articles/want-good-products-and-processes-train-good-employees> Last accessed September 28, 2009
- Goldsmith, J., & Green, G.P.(2009). *Wisconsin's Plastic Valley Association: A Cluster Based Development Strategy.* *Journal of Extension*, 47(4). http://www.joe.org/joe/2009august/pdf/JOE_v47_4a8.pdf Last accessed September 28, 2009.
- Industry Training Authority (March, 2006). *Alternative Trades Training: Best Practices from across Canada.* <http://www.itabc.ca/AssetFactory.aspx?did=57> . Last accessed September 29, 2009.
- Knoblauch, Jessica (July 2, 2009). *The environmental toll of plastics.* *Environmental Health News.* <http://www.environmentalhealthnews.org/ehs/news/dangers-of-plastic>
- Landau, S., Ellis, S., Ennen, W., & Forrant, R. (2000). *Strategies to Support the Plastics Industry in North Central Massachusetts: A Report to the City of Leominster.* <http://www.massbenchmarks.org/publications/studies/pdf/plastics00.pdf> . Last accessed September 28, 2009.
- Mital, A., Pennathur, A., Huston, R.L., Thompson, D., Pittman, M., Markle, G., Kaber, D.B., Crumpton, L., Bishu, R.R., Rajurkar, K.P., Rajan, V., Fernandez, J.E., McMulkin, M., Deivanayagam, S., Ray, P.S., & Sule, D. (1999). *The Need for Worker Training in Advanced Manufacturing Technology (AMT) Environments: A White Paper.* *International Journal of Industrial Ergonomics*, 24, 173-184.

Plastics in Canada (February, 2009). *Humber College Closes Plastics Training.*

http://www.canadianmanufacturing.com/plasticsincanada/news/industry/article.jsp?content=20090204_152630_19760 . Last accessed September 28, 2009.

Prism Economics and Analysis (October, 2007). *Achieving Our Potential: The Plastics Industry to 2016.* Report to the Canadian Plastics Sector Council Board of Directors.

<http://www.cpssc-ccsp.ca/PDFS/Final%20report%20Oct%20%2029.pdf> . Last accessed September 28, 2009.

Umiker, William O. (April, 1994). Does training increase employee retention? Medical Laboratory Observer.

APPENDIX C – FOLLOW-UP CHARTS (ANALYSIS BY REGION AND SIZE)

Table C-1
Average difficulties with staff turnover “prior to the economic downturn”
and “during the economic downturn”, by Region

Region	Prior to economic downturn	During economic downturn
British Columbia	1.83	2.00
Prairies	2.58	1.75
Ontario	1.95	1.97
Quebec	2.41	2.05
Atlantic	2.00	2.56

N(3 to 5 years ago)=180, N(last two years)=182; Does not include “Don’t know”

Reference: Employer Survey B1a & B1b

* Numbers represent an average score on a five point scale from 1=“not at all an issue” to 5=“a major issue”.
Higher numbers indicate a greater perceived problem with staff turnover.

Table C-2
Average perceived labour shortages in the next “1 to 2 years”
and “3 to 5 years”, by Region

Region	Next 1 to 2 years	Next 3 to 5 years
British Columbia	2.10	2.21
Prairies	2.31	2.75
Ontario	2.10	2.44
Quebec	3.33	3.75
Atlantic	2.67	3.00

N(1 to 2 years)=178, N(3 to 5 years)=175, Does not include “Don’t know”

Reference: Employer Survey B2a & B2b

* Numbers represent an average score on a five point scale from 1=“not at all an issue” to 5=“a major issue”.
Higher numbers indicate greater perceived labour shortages.

Table C-3
Percentage of Firms, by Region, Who Reported
“Retaining Staff” as a Training Issue

Region	Percentage
British Columbia	59%
Prairies	43%
Ontario	22%
Quebec	18%
Atlantic	22%

N=184

Reference: Employer Survey C1

Multiple responses permitted.

Table C-4
Percentage of Firms, by Region, Who Reported “Reduction of Waste Product” as a Training Issue

Region	Percentage
British Columbia	50%
Prairies	53%
Ontario	25%
Quebec	40%
Atlantic	33%

N=184

Reference: Employer Survey C1

Multiple responses permitted.

Table C-5
Percentage of Firms, by Size, Who Reported “Improve Worker Productivity” as a Training Issue

Number of employees	Percentage
5 or less	39%
6 to 100	53%
101 to 500	82%
500 or more	58%

N=184

Reference: Employer Survey C1

Multiple responses permitted.

Table C-6
Percentage of Firms, by Size, Who Reported “Production of Quality Products” as a Training Issue

Number of employees	Percentage
5 or less	29%
6 to 100	51%
101 to 500	67%
500 or more	42%

N=184

Reference: Employer Survey C1

Multiple responses permitted.

Table C-7
Percentage of Firms, by Size, Who Reported “Working around a Shift Schedule in a 24-Hour Work Environment” as a Training Challenge

Number of employees	Percentage
5 or less	0%
6 to 100	33%
101 to 500	56%
500 or more	42%

N=184

Reference: Employer Survey C4

Table C-8
Percentage of Firms, by Type of Operation, Who Reported “Lack of Funding for Training from Sources Other than Your Company” as a Training Challenge

Type of Operation	Percentage
Injection Moulding	54%
Profile Extrusion	17%
Thermoforming	32%
Composites	43%
Blow Moulding	75%
Rotational Moulding	0%
Plastics Fabrication	32%

N=123

Reference: Employer Survey C4

Table C-9
Percentage of Firms, by Region, Who Reported Delays or Difficulties Hiring New Employees

Region	Percentage
British Columbia	38%
Prairies	45%
Ontario	32%
Quebec	78%
Atlantic	67%

N=184

Reference: Employer Survey B3a

Table C-10
Percentage of Firms, by Region, Who Reported Hiring Candidates with “College/CEGEP Training” as a Training Issue

Number of employees	Percentage
British Columbia	25%
Prairies	35%
Ontario	30%
Quebec	70%
Atlantic	22%

N=184

Reference: Employer Survey B4b

Table C-11
Percentage of Firms, by Type of Operation, Who Reported that “Accounting/Book Keeping” were a Preferred Focus for Employee Training

Type of Operation	Percentage
Injection Moulding	3%
Profile Extrusion	0%
Thermoforming	9%
Composites	0%
Blow Moulding	25%
Rotational Moulding	33%
Plastics Fabrication	23%

N=123

Reference: Employer Survey D8

Table C-12
Percentage of Firms, by Region, Who Reported “In-house Formal Training by and External Trainer” as a Preferred Training Method

Number of employees	Percentage
British Columbia	19%
Prairies	63%
Ontario	37%
Quebec	63%
Atlantic	56%

N=184

Reference: Employer Survey D7

Table C-13
Percentage of Firms, by Region, Who Reported “Apprenticeship” as a Preferred Training Method

Number of employees	Percentage
British Columbia	28%
Prairies	30%
Ontario	35%
Quebec	8%
Atlantic	44%

N=184

Reference: Employer Survey D7

Table C-14
Percentage of Firms, by Region, Who Supported “On-the-job Training” over the Past Twelve Months

Number of employees	Percentage
British Columbia	69%
Prairies	83%
Ontario	83%
Quebec	55%
Atlantic	89%

N=184

Reference: Employer Survey D2

Table C-15
Percentage of Firms, by Region, Who Supported “E-learning” over the Past Twelve Months

Number of employees	Percentage
British Columbia	22%
Prairies	28%
Ontario	40%
Quebec	13%
Atlantic	11%

N=184

Reference: Employer Survey D2

Table C-16
Percentage of Firms, by Size, Who Supported “Time off Work to Attend Training” over the Past Twelve Months

Number of employees	Average
5 or less	25%
6 to 100	56%
101 to 500	67%
500 or more	58%

N=184

Reference: Employer Survey D2

Table C-17
Percentage of Firms, by Size, Who Supported “In-house Formal Training” over the Past Twelve Months

Number of employees	Average
5 or less	50%
6 to 100	67%
101 to 500	89%
500 or more	75%

N=184

Reference: Employer Survey D2

Table C-18
Average Effectiveness Rating, by Region, for “Training Provided by Suppliers/Equipment Manufacturers”

Number of employees	Percentage
British Columbia	2.65
Prairies	2.89
Ontario	3.49
Quebec	3.44
Atlantic	3.00

N=162, Does not include “Don’t know”

Reference: Employer Survey D1

* Numbers represent an average score on a five point scale from 1=“not very effective at all” to 5=“very effective”. Higher numbers indicate greater perceived effectiveness.

Table C-19
Average Effectiveness Ranking of “Training Provided Third Party Companies”, by Region

Number of employees	Percentage
British Columbia	2.59
Prairies	2.43
Ontario	3.32
Quebec	3.37
Atlantic	3.50

N=162, Does not include “Don’t know”

Reference: Employer Survey D1

* Numbers represent an average score on a five point scale from 1=“not very effective at all” to 5=“very effective”. Higher numbers indicate greater perceived effectiveness.

Table C-20
Average Effectiveness Ranking of “E-learning”, by Region

Number of employees	Percentage
British Columbia	1.92
Prairies	2.06
Ontario	2.84
Quebec	2.70
Atlantic	1.75

N=127, Does not include “Don’t know”

Reference: Employer Survey D1

* Numbers represent an average score on a five point scale from 1=“not very effective at all” to 5=“very effective”. Higher numbers indicate greater perceived effectiveness.

Table C-21
Percentage of Gross Revenue Spent on Employee Training, by Size

Number of employees	Average
5 or less	6%
6 to 100	3%
101 to 500	2%
500 or more	3%

N=100; Excludes Don’t Know/No Response

Reference: Employer Survey C2

Table C-22
Percentage of Training Budget Spent on Managerial/Supervisory Training, by Size

Number of employees	Average
5 or less	9%
6 to 100	19%
101 to 500	23%
500 or more	39%

N=101; Excludes Don’t Know/No Response

Reference: Employer Survey C3