

# THE FUTURE IS

A stylized flame graphic with a yellow-to-red gradient, positioned above the letter 'O' in the word 'HOT'.

# HOT

AN ANALYSIS OF  
EMERGING OCCUPATIONS &  
PROJECTED SECTOR GROWTH

An examination of local, regional,  
provincial and national trends



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RELEASED: MARCH, 2007

The Grand Valley Educational Society would like to extend our sincere appreciation to our community partners for their generous support in the creation and production of this report;



Grand Erie Training And Adjustment Board  
Commission de formation et d'adaptation de la main-d'oeuvre du Grand Erie

**THE ONTARIO  
TRILLIUM  
FOUNDATION**



**LA FONDATION  
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*The Ontario Trillium Foundation, an agency of the Ministry of Culture, receives annually \$100 million of government funding generated through Ontario's charity casino initiative.*

*Note: this report is available on the GVES website in PDF format*  
[www.gves.ca](http://www.gves.ca)

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**EXECUTIVE SUMMARY**

In an effort to identify educational initiatives that will achieve the highest level of success for our students, this report highlights occupations and industries that are predicted to experience above average growth through to 2015. The information provided will assist the GVES and community stakeholders in identifying those trends and opportunities that are best suited to the Brantford Campuses of Mohawk College and Laurier University.

It is important to note that post secondary education will be a fundamental requirement—predictions indicate that about **70% of all new jobs** created over the next five years are expected to require some sort of **post-secondary** education/training. The proportion of workers in Ontario with post-secondary qualifications increased sharply between 1990 and 2004, and the trend for post secondary education and training will continue with a unique focus on **fusion of training, education and skills**.

**EMERGING SECTORS**

	Indicates above average growth predicted
	Indicates average growth predicted

	Local	Regional	Provincial	National
Health Care				
Emergency Services				
Aerospace				
Biotechnology				
Chemical				
Food				
Logistics				
Plastics & Rubber				
Primary/Fabricated Metals				
Automotive				
Machinery				
Packaging				
Waste/Waste Water Mgt.				

### EMERGENCY SERVICES

- Ambulance Attendants and Other Paramedical Occupations (NOC 3234)  
Demand for these experts has increased because of a growing and aging population, restructured health care funding, increased coverage of health care plans, new technological advancements, and pressure for more on-scene medical attention
- Police Officer (except commissioned) (NOC 6261)  
The retirement rate is above average. 40-50% of senior officers will retire in the next five years.
- Security Guards and Related Occupations (6651)  
Private security firms are developing and implementing advanced security technologies such as biometric scanning, which can be used to identify people on the basis of physical or personal characteristics; face scanning technology, which can be used to mathematically establish the characteristics of a given face. Private firms are also participating in other highly sophisticated activities, such as intelligence gathering and counter-terrorism, corporate security, covert operations, espionage, forensic accounting and computer surveillance.



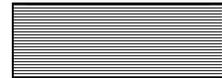
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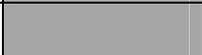
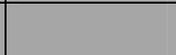
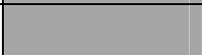
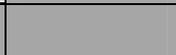
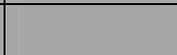
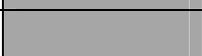
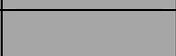
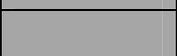
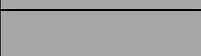
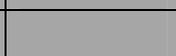
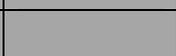
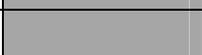
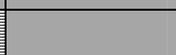
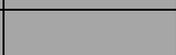
- Professional occupations including; Nursing (all levels), Pharmacist, Rehabilitative medicine and Inspectors
- Medical and Hospital Assistants
- Medical Technologists/Technicians
- Radiography, Radiation Therapy and Nuclear Medicine Technologies
- Information Technology
  - Telehealth
  - Telemedicine
  - Patient Care Management
- Waste Management (biomedical waste with a focus on new technologies)
- Nanobiotechnologies
- Management & Administration
- Training & Education



EMERGING OCCUPATIONS - PRODUCTS

 Indicates above average opportunities predicted

 Indicates average or limited opportunities predicted

	Management & Supervisory	Skilled Trades	Laboratory Specialists	Technicians & Technologists	Technical Sales & Marketing	Regulatory Specialists	Technology	Engineers
Aerospace								
Biotechnology								
Chemical								
Food								
Logistics								
Plastics & Rubber								
Primary/Fabricated Metals								
Automotive								
Machinery								
Packaging								
Waste/Waste Water Mgt.								

Since its inception in 1996, the vision of the Grand Valley Educational Society (GVES) has remained unchanged—to enhance post secondary education in Brantford and surrounding areas.

Although this vision has not changed, the strategic direction and action plan to support this vision continues to evolve exponentially. After achieving the initial goal of securing a university presence in the downtown, the GVES has been the “driving force” to numerous initiatives designed to increase the intellectual capital of our local workforce and, in doing so, realize substantial economic benefits through post secondary education.

Through enhanced post secondary education, it is the intent of the GVES to strengthen community partnerships in creative, innovative and collaborative initiatives that will:

- have long term sustainability
- be relevant to community needs
- promote life long learning
- increase the skill base and marketability of our workforce
- be a major “attractor” for new business
- promote economic development

As a proactive board representing Brantford and Brant County, the success achieved by the volunteer members has been directly attributed to their belief in strong community partnerships. Having identified partnerships as critical to the success of post secondary initiatives, it was obvious that future directions required a concentrated effort on the integration of college and university programming.

The result—the Brantford Centre project. The Brantford Centre is a unique 3 stage initiative based on a partnership between Mohawk College, Wilfrid Laurier University, The City of Brantford and the GVES. The concept is dedicated to the integration of college and university programs, with an increased focus on workforce skills development, life long learning, and business and industry participation.

This collaborative effort has seen the realization of Stage 1 (The Odeon) opened to Mohawk and Laurier students in September of 2004. Since then, the GVES has been diligent in pursuing government support for Stage 2—a proposed academic centre for state of the art communications including multimedia labs and newsroom to serve four streams of journalism programming. As of the publication of this report, Stage 2 of the project has been deferred, and the GVES has now directed all their energies towards Stage 3—a centre of excellence for advanced manufacturing technologies.

Stage 3 of the Brantford Centre will have an even greater focus on partnership and collaboration and will incorporate another key element to the success of post secondary education—direct input, support and commitment from business and industry. This third stage of the Brantford Centre Project will pursue, as its anchor program, the world’s largest employer! The graphics and packaging industries represent global opportunities and are an ideal fit with the local and regional employment trends.

## PURPOSE

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Any vision needs to have a foundation that is based on realistic and sustainable goals. A vision of increasing the intellectual capital of our workforce and providing another spirit to the economic dimension of Brantford through post secondary education is admirable; however, the GVES realized the need to strengthen that foundation with an examination of business and industry drivers.

As a result, this report was generated as a **TRENDS ANALYSIS** highlighting;

- (a) business and industries that are predicted to experience high levels of growth
- (b) occupations that are predicted to be in high demand either due to business growth or projected retirements

The report is an invaluable tool that will assist the GVES in concentrating their support on initiatives that will achieve the highest level of success for our students, our community and our workforce. The information provided will assist the partnership in identifying those trends and opportunities that are best suited to the Brantford Campuses of Mohawk College and Laurier University.

With Stage 3 of the Brantford Centre being the current priority for the GVES, there was a need to critically review the proposed anchor program—Graphics and Packaging Technology. Preliminary research indicated that this sector is the largest employer in the world—and that the potential exists to create an advanced manufacturing centre with an international level of recognition.

The challenge became how to harmonize occupational training for the graphics and packaging technology industries with (a) local needs of other industry sectors and (b) individual needs to increase skills, knowledge and marketability.

Through the information provided by the trends analysis the GVES firmly believes that this is a realistic and achievable goal—a goal that will support the delivery of higher-quality programs. Further these programs have the potential to be supplementary and complimentary to the current college and university programming.

The value of the trends analysis will truly be realized when, collectively, the Brantford Centre partnership is proactive and responds to those trends with integrated programming. Especially as Stage 3 moves towards becoming a reality, the GVES eagerly anticipates:

- (a) an increased level of industry participation and interest
- (b) an increased level of integrated programming, with a dual credit focus
- (c) an increased level of student interest, perhaps on an international level

When sourcing information for this report recognition was given to the fact that globalization is synonymous with doing business today. As a result, the report goes beyond local business and industry, and emphasizes trends that are occurring on a local, regional, provincial and national level.

That is not to imply that this report is all inclusive—highlighting all occupational trends and business and industry growth patterns. There was a degree of editorial privilege exercised during the composition of the report to ensure that the information presented focused on those occupational and industry trends that are closely aligned with trends experienced by our local communities.

Information gathered is a combination of statistical analysis and qualitative studies conducted on both industry and occupational trends. In reviewing the information the goal was to identify those areas of growth that shared several common training and educational denominators.

Special attention and consideration was given to those occupational trends that spanned across multiple industries. The goal was to focus on training and education opportunities that would provide the greatest range of skills across the greatest range of opportunities.

It is important to note that when an industry sector has been identified as experiencing a growth projection, the type of employment opportunities available extend from administrative and clerical through to senior levels of management—from basic entry level to highly skilled employees. For the purposes of this report, the goal was to focus on those occupations that represented a “good fit” with post secondary education and identified opportunities for integrated programming and transferable credits.

The report represents a synopsis of available information (qualitative and statistical) on business, industry and occupational trends that are projected to have moderate to above average growth through to 2015.

Over the next five years almost a 1,000,000 new jobs are projected to be created. The challenge was to determine which trends to highlight, especially as data and research indicates that ***there will be job opportunities in all major occupational groups.***

As it is important to recognize that globalization is a competitive reality, information was sourced that represents local, regional, provincial and national trends. Although some sections will have a specific source indicated the primary sources of information include:

- City of Brantford—economic development department  
<http://www.brantfordbrant.com/>
- Statistics Canada  
<http://www.statcan.ca/>
- Service Canada  
<http://www.servicecanada.gc.ca/>
- Job Futures - <http://www.jobfutures.ca/>
- Labour Market Trends - <http://lmi-imt.hrdc-drhc.gc.ca/>
- Industry Canada  
<http://www.ic.gc.ca/>
- Grand Erie Training & Adjustment Board  
<http://www.getab.on.ca/>
- Ontario Economic Development  
<http://www.2ontario.com/>
- Ontario Job Futures  
<http://www1.on.hrdc-drhc.gc.ca/>
- Ministry of Training, Colleges & Universities  
<http://www.gov.on.ca/>

In many cases, the information sourced on an industrial trend was reinforced with research obtained from organizations representing a specific sector. In the case of plastics (for example) which is highlighted in food, pharmaceutical, packaging and automotive parts manufacturing, additional information was obtained from the Canadian Plastics Industry Association.

When selecting those trends and opportunities that would form the foundation of this report, the following key points were taken into consideration:

- Select those trends that are projected to achieve the highest level of success for our students, our community and our workforce
- Select trends that have the potential to create post secondary initiatives that will provide graduates with the opportunity to apply their skills and training to multiple industries and occupations; to increase their opportunities and choices for careers
- Address local needs while considering student preparation for global opportunities
- Attempt to highlight trends that are best suited to initiatives for the Brantford Campuses of Mohawk College and Laurier University

## ***Industry Trends***

Some of the divisions highlighted in this report are complementary services that apply to multiple industries. It is important to note that these complementary sectors are not only impacted by industries experiencing above average growth, but also those industries that may have moderate or fair growth projections. For example, logistics, waste and water management and packaging are complementary services for above average growth trends in Health and Manufacturing, but are applicable to all major industrial groups.

In select cases the growth trend was very generalized (i.e. Manufacturing or Health), but through statistical analysis on a regional and local level, the report was able to provide more detailed information on specific occupations in the sector.

## ***Occupational Trends***

Although the report is designed to highlight those occupations that are projected to experience above average growth, it is important to note that any **sector** that has been identified as in a growth trend will impact ***all occupations within that sector***. For example, the plastics and rubber sector is in a definite above average growth trend. As the entire industry is in a growth trend, it will affect occupations in:

- Front line manufacturing staff / machine operators
- Middle to Senior Management
- Trades
- Transportation and Logistics
- Business, Finance & Administrative
- Technical Sales & Service

Perhaps the last, but still critical element, to identify in occupational trends is the impact of projected retirements. Some of the occupational trends highlighted in this report are not necessarily a direct result of an above average growth projection in the industry but are a direct result of the projected high retirement rates for the industry.

## REPLACEMENT NEEDS

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In addition to new job openings as a result of increased economic activity, retirements will also create job opportunities. Retirements will lead to job opportunities in all major occupational groups and will account for an additional one million job openings over the next five years.

The replacement needs created by the retirement of ageing workforces can lead to occupational shortages if trained or experienced workers cannot be found to take their place. It is projected that occupations requiring a higher level of education/training will account for two thirds of job opportunities arising from retirements.

The following statistics from Ontario Job Futures highlights both sector and occupational replacement needs that are anticipated to exceed the projected provincial retirement rate (through to 2015) of 29.8%.

Sectors projected to exceed 29.8% (shown in order of greatest loss):

- Postal service
- Clothing manufacturing
- Educational services
- Primary metal manufacturing
- Hospitals
- Provincial public administration
- Utilities
- Federal public administration
- Paper manufacturing
- Truck transportation
- Prime contracting
- Miscellaneous manufacturing
- Chemical manufacturing
- Food manufacturing
- Repair and maintenance

Occupations projected to exceed 29.8% (shown in order of greatest loss):

- Bookkeepers
- Secretaries (except legal and medical)
- Janitors, caretakers and building superintendents
- Visiting homemakers, housekeepers and related occupations
- Registered nurses
- Licensed practical nurses
- Stationary engineers and auxiliary equipment operators
- Crane operators
- Nurse aids and orderlies
- Manufacturing managers
- Payroll clerks
- Security guards and related occupations
- Construction millwrights and industrial mechanics
- Machine operators and inspectors
- Electrical apparatus manufacturers

## CLASSIFICATION SYSTEMS

One of the challenges presented during the research phase, was the paralleling of classification systems used throughout various studies and surveys. The three primary classification systems used are; NAICS (North American Industry Classification System), SIC (Standard Industrial Classification), NOC (National Occupational Code)<sup>1</sup>.

The classification systems used are quite extensive and complex in nature. The level of detail obtained and presented in this report, was determined by the degree of impact and growth the industry or occupation represented on a local through to regional level.

### **Consider the following example:**

Service Canada identified manufacturing as one of the top five industries for the Brantford area, specifically manufacturing in the NAICS major grouping 31 – 33.

However, this grouping represents manufacturing in:

311	Food Manufacturing
325	Chemical Manufacturing
326	Plastics and Rubber Products Manufacturing
327	Non-Metallic Mineral Product Manufacturing
331	Primary Metal Manufacturing
332	Fabricated Metal Product Manufacturing
333	Machinery Manufacturing

This preliminary, and somewhat generalized information was expanded through a more detailed analysis at a local level. The “City of Brantford and the County of Brant (Brantford-Brant) Food Industry Segmentation Study” released in October 2005 provided extensive classification and definition of 311—Food Manufacturing. This level of research at the local level highlighted the top growth categories of food manufacturing on the basis of gross domestic product.

NAICS Code				2004 vs. 2000
<b>311</b>			<b>Food Manufacturing Overall</b>	<b>112.3%</b>
			<b>Major Categories:</b>	
	3113A		Confectionary product	132.3%
		31122	Sugar & Confectionary product	121.6%
		31191	Snack Food	119.3%
312		31213	Wineries	118.4%
	3112	31121	Flour milling & Malt	118.1%
		311611	Animal (ex. poultry) slaughter	113.6%
	3117		Seafood product & preparation	113.3%
311A			Misc. Food	113.6%
	3116		Meat product	112.3%
	3119		Other food	112.2%

<sup>1</sup> Please see Appendix A for classification system definitions

## INCREASED IMPORTANCE OF POST SECONDARY EDUCATION

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The timing could not be better for the community to invest in expanded and enhanced post secondary education. A common theme throughout the trends analysis is that most new job creation will be in occupations requiring considerable education and training. Consider the following projections:

- About 70% of all new jobs created over the next five years are expected to require some sort of post-secondary education/training
- Occupations requiring a university degree will account for 22% of projected new jobs
- Occupations requiring extensive post-secondary but less than university degree requirements will account for 29% of new jobs
- Many occupations of the future, especially those providing opportunity for advancement, will revolve around skills and education obtained through integrated college/university programming
- Occupations requiring formal education and training **after gaining workplace experience** will account for about 9% of all new jobs

*Source: Labour Market Information and Research, MTCU*

*There has been a dramatic increase in both the education and skill level required for all occupations. While there is still a large number of low skill, entry-level occupations, more and more now have higher basic requirements. As this trend continues, learning will not cease after leaving school but will need to continue throughout a person's whole career.*

*The proportion of workers in Ontario with post-secondary qualifications increased sharply between 1990 and 2004. A relatively recent development, especially evident in new and evolving "high tech" jobs, is the fusion of training, education and skills. The need for specific job-related knowledge or skills is not restricted to just a few occupations or jobs. Employers today look for a broader set of skills in all workers.*

*Source: Human Resource Skills Development Canada*

It is important to recognize that most new job creation, especially in emerging markets, will be in occupations that will require considerable education and training. There is a strong link between education and training and the chances of finding employment. The choices made today must recognize the move towards a knowledge-based economy.

## **Ambulance Attendants and Other Paramedical Occupations (NOC 3234)**

### Growth Indicators & Trends

- Employment for this occupation is expected to grow more rapidly than the average for all occupations through the year 2009.
- Demand for these experts has increased because of a growing and aging population, restructured health care funding, increased coverage of health care plans, new technological advancements, and pressure for more on-scene medical attention.
- Demand for these experts will likely also grow because of an increase in urban living, as well as stress-induced turnover.
- The number of recent graduates and immigrants available to fill job openings will likely be below average, and the number of job openings should exceed the number of job seekers.
- Ambulance services typically do not advertise for workers. Graduates from college programs tend to send in unsolicited applications. As a general rule, workers are initially hired on a temporary basis and from there are moved to regular part-time and then to full-time positions, as vacancies become available.
- The growing use of computerized equipment and dispatch systems will lead paramedics to new computer applications.
- The unemployment rate (1.6%) is significantly below average (5%).

### **Top Occupations**

Emergency medical assistant, advanced emergency medical assistant  
Ambulance driver, ambulance attendant  
Emergency medical attendant (EMA)  
Emergency medical technician (EMT)  
Emergency medical technician, paramedic (EMT-P)  
Paramedic  
Search & Rescue technician  
Advanced life support attendant  
Infant transport attendant  
Advanced life support coordinator  
Ambulance service field supervisor  
Ambulance service unit chief  
Ambulance technician

## **Police Officer (except commissioned) (NOC 6261)**

### **Growth Trends & Indicators**

- The retirement rate is above average. 40-50% of senior officers will retire in the next five years. *Source: Police Council of Canada*
- The unemployment rate (0.5%) is substantially below average (6%).
- There are a total of 61,050 Police Officers serving 32,270,507 Canadians.
- Ratio of 186 per 100,000; or one officer for every 528 people in Canada.
- Women represent 17% of the workforce and are relatively young; 74% have less than 15 years' experience.
- At current levels, recruitment rates of constables will not be sufficient to replenish exit of mid/senior officers.
- Increase in the use of computer technology is substantial. Crime is more sophisticated and technology enabled, organized crime knows no jurisdictional boundaries.
- Investigations are increasingly complex and labour-intensive. Longer and more complex investigations demand a wider range of skills and collaboration among multiple police forces, including the ability to lead and participate in more varied teams.
- There is an identified need to resource a diverse and community-reflective workforce. Police need to be recognized as “employers of choice” by ethnic groups.
- Changing service demands and training requirements to service an older, and increasingly immigrant base population.
- White-collar crime: Criminals are increasingly using cutting-edge computer and telecommunications equipment and software.
- Private sector security and investigative organizations are increasingly recruiting highly qualified personnel from police services.
- Training facilities will have to re-examine their enrolment capacities to ensure that they are able to train the number of new recruits that police services will require in the near future. *Source: Strategic Human Resources Analysis of Public Policing in Canada.*
- An escalation in “self policing” by corporations and institutions has resulted in an increase of “specialized training”. Examples include: Special Constable status, By-Law Enforcement officer.

### **Top Occupations**

Police Constable  
Canadian Security Intelligence Service (CSIS)  
Coast Guard Officer / Harbour Police / Ports Canada police Officer  
Community Relations / Services Officer  
Detective (counterfeit, forgery, narcotics, vice)  
Evidence Technician  
Patrol Officer  
Police Scuba Diver / Scuba Specialist  
Customs

## **Security Guards and Related Occupations (6651)**

### **Growth Trends & Indicators**

- Over the past twenty years, the investigation and security services field has seen considerable expansion, characterized by both a rapid rise in business and a diversification in activity.
- With the growth of high-tech industries such as computers, aeronautics and pharmaceuticals, security needs, and therefore the nature of work in the security industry, are becoming increasingly complex.
- A number of jobs that used to be the exclusive preserve of public police forces are now performed by private firms. A number of new technologies being introduced by governments in airports are manufactured, installed and operated by private security companies.
- In 1997, the investigation and security services industry included 2,746 establishments and generated over two billion dollars in revenue. Almost all the revenue came from protection services (87%), followed by sales of goods (8%).
- Private consulting firms regularly conduct investigations of suspect financial operations and prepare briefing documents for police fraud squads. In some urban areas, private companies are now profiling air travelers to determine whether they are genuine passengers or potential terrorists.
- There has also been an increased demand for private security services, as businesses reassess their security plans in light of the new reality (September 11, 2001).
- The governments in Canada and the United States are now playing a larger role in airport security. In the federal budget of December 2001, Parliament committed \$7.7 billion dollars to support measures to improve security, including Canada-U.S. border points.
- Private security firms are developing and implementing advanced security technologies such as biometric scanning, which can be used to identify people on the basis of physical or personal characteristics; face scanning technology, which can be used to mathematically establish the characteristics of a given face.
- Private firms are also participating in other highly sophisticated activities, such as intelligence gathering and counter-terrorism, corporate security, covert operations, espionage, forensic accounting and computer surveillance.
- The proliferation of computers and the explosion of information technology have made it easier for institutions and businesses to observe and record the movements and behaviour of clients, workers and strangers.
- Several municipalities have installed closed-circuit television systems with surveillance cameras. Scanning technology is being used in casinos in Ontario and in airport security.
- Electronic surveillance systems will increasingly replace "gatekeeper" security guards.

### **Top Occupations**

Investigation, Guard and Armoured Car Services (NOC 56161)  
Investigation Services (NOC 561611)  
Security Guard and Patrol Services (NOC 561612)  
Armoured Car Services (NOC 561613)  
Security Systems Services (NOC 56162)

### Growth Indicators & Trends

- The service-producing sector employs nearly three quarters of Ontario workers (74%). Health care represents the second largest component (14%) in this sector.
- Between 2002-2010, the Health Services field is expected to grow twice as fast as average, compared to other industries. The employment growth rate is expected to be significantly above average due to retirements, aging population, and expanded diagnosing/treating technologies.
- A growing and aging population will require more health services, new diagnosing/treating technologies, and increased government funding for health care.
- Retiring workers and foreign recruiters hiring Canadian workers, due to global shortages, will contribute to the number of opportunities and job openings in the Health Industry. A major shortage of nursing staff is forecast over the coming years. The average age of nurses (male and female) is 47, and most of them retire in their mid-fifties.
- The hospitals and other institutions industry accounts for 2.3% of the Canadian Gross Domestic Product (GDP), \$17.9 billion of a total \$750.2 billion. In addition to being an everyday concern, health, particularly in the role of the hospitals, is an important driving force in the Canadian economy. *Source: Statistics Canada*
- The unemployment rate in 'hospitals and other institutions' industry stands at 1.5 %. An unemployment rate as low as this is excellent for workers but not for the institutions seeking skilled employees!
- Sectors within the industry will experience new/evolving trends creating increased opportunities:
  - Medical Laboratory Technologies will be impacted as new tests and testing procedures are developed, increasing the volume of laboratory tests. According to the Canadian Society for Medical Laboratory Science, approximately half of Canada's Medical Laboratory Technologists are expected to retire within the next 13 years. As well, more powerful new diagnostic techniques, such as DNA testing, will increase the demand for medical technologists
  - Medical Radiation Technologists will experience an above average growth through the year 2009. Increases in illnesses associated with an aging population in addition to innovations in the use of nuclear medicine to diagnose illnesses, such as cancer, are predicted to increase demand for these professionals
  - The growing number of middle-aged and elderly who tend to use more prescription drugs than younger people, will result in above average opportunities in pharmacies
  - Telehealth and telemedicine will assist to address health care challenges in rural areas or where specialists are not readily available
  - Research and development will focus on nanotechnologies (medical devices and treatment/therapies at a molecular level)
  - A shortage of anesthetists, whose present average age is fifty, is also forecasted

**Employed Labour Force in Health Care and Social Assistance  
County of Brant, County of Haldimand and County of Norfolk, 2001**

Industry	County of Brant		County of Haldimand		County of Norfolk	
	#	%	#	%	#	%
Hospitals	1,335	24.2%	580	28.2%	640	25.7%
Nursing and residential care facilities	1,260	22.8%	500	24.3%	605	24.2%
Child day-care services	510	9.2%	190	9.2%	180	7.2%
Offices of physicians	505	9.2%	110	5.3%	160	6.4%
Offices of other health practitioners	385	7.0%	90	4.4%	135	5.4%
Individual and family services	365	6.6%	175	8.5%	230	9.2%
Out-patient care centres	320	5.8%	80	3.9%	120	4.8%
Home health care services	280	5.1%	120	5.8%	210	8.4%
Offices of dentists	245	4.4%	115	5.6%	105	4.2%
Vocational rehabilitation services	135	2.4%	55	2.7%	20	0.8%
Medical and diagnostic laboratories	85	1.5%	15	0.7%	30	1.2%
Other ambulatory health care services	45	0.8%	25	1.2%	45	1.8%
Community food and housing, and emergency and other relief services	45	0.8%	0	0.0%	20	0.8%
<b>Total</b>	<b>5,515</b>	<b>100.0%</b>	<b>2,060</b>	<b>100.0%</b>	<b>2,495</b>	<b>100.0%</b>

*Source: Statistics Canada, 2001 Census Special Tabulation*

### Local Opportunities at a Glance

The following information and statistics are highlights from the "Assessment of Health Human Resource Trends and Issues in Grand Erie" report released by the Grand Erie Training and Adjustment Board in 2006.

- The health care and social assistance sector in the Grand Erie Training and Adjustment Board accounts for 9.1% of all employment for local residents.
- Critical challenges faced by existing staff in health care include:
  - › lack of local education programs available for training and upgrading
  - › mandated increased training and education requirements

## Healthcare - Local Opportunities at a Glance cont'd

- Suppliers of health care are experiencing difficulty encouraging staff to participate in training and education programs. This is often due to:
  - › Staff generally reluctant to travel to larger centres for education
  - › Existing staff cannot afford either the time or cost of training to obtain required degree (Registered Nurse, now requires a Bachelor of Science degree instead of a diploma)
  - › Lack of local training opportunities results in students training outside the area (increased time and travel cost) and choosing to start their careers elsewhere as a result of leaving the community for education
  - › Bridging programs are no longer offered locally. Transitional programs need to be in the immediate area to allow staff to upgrade their skills (i.e. Health Care Aide to Personal Support Worker, Personal Support Worker to RPN, RPN to RN, RN to RN with B. Sc., RN to RN (Extended Class))
  - › Lack of alternate delivery systems. The length of time online courses take to complete is extensive, leaving many staff with only the option of attending classes at educational institutions
- Additional challenges experienced by providers of health services include:
  - › Lack of qualified applicants
  - › Requirement for internationally-trained immigrants to qualify, which often means re-training
  - › All Nurses Aides, Nursing Attendants and Health Care Aides to have Personal Support Worker designation
  - › Training received for positions such as Personal Support Worker does not adequately prepare a new staff member to work independently as required in many rural settings
  - › Some post secondary institutions provide better preparation and training to graduates – students need practical and soft skills
  - › Lack of seats in courses at educational institutions means insufficient graduates available for positions created for RN (Extended Class) or Nurse Practitioner occupation
  - › A lack of Nursing Masters and PHD graduates results in fewer qualified professors at universities to meet need of Bachelor program requirements, again impacting the ability of educational institutions to create seats for students

## Top Occupations

### Professional

Job titles include:

Nurse Practitioner (RNEC)	Pharmacist
General Duty Registered Nurse	Dentist
Occupational Health Nurse	Dental hygienist / therapist
Community Health Nurse	Optometrist
Psychiatric Nurse	Inspector - Public & Environmental Health
Nursing Consultant	Inspector – Occupational Health & Safety
Nursing Researcher	Rehabilitative medicine (physiotherapists, occupational, audiologists)
Clinical Nurse	Registered nurse (head nurse, midwife or health care manager)
Registered Practical Nurse	

## Top Occupations cont'd

### Medical and Hospital Assistants

Employment for this occupation is expected to increase more rapidly than average for all occupations through the year 2009. Because of the large size of this occupational group, job growth will create a substantial number of openings each year. Job titles include:

Nurses Aide/Nursing Attendant	Activation Therapist
Hospital Attendant	Recreational Therapist
Long Term Care Aide	Recreationist
Orderly	Therapeutic Recreation Therapist
Patient Care Aide	Communication Disorder Assistant
Patient Service Associate	Dental Hygienist Assistant
Personal Support Worker	Dietary Aide
Health Care Aide	Hearing Care Assistant
Home Support Level 2	Homemaker
Home Support Level 3	Occupational Therapy Assistant
Pharmacy Assistant	Physiotherapy Assistant
Pharmacy Technician	Rehabilitation Assistant
Health Records Technician	Psychiatric Aide

### Medical Laboratory Technologies/Technicians

Most recent entrants have a community college diploma, and almost 2 in 5 have an undergraduate university degree. Subjects include; clinical chemistry, clinical microbiology, hematology, histology, and immuno-hematology. Medical laboratory technicians work in medical laboratories in hospitals, clinics, research institutes, universities, and government research laboratories. Occupations include: (NOC 312) Medical Laboratory Technician (except dental), Medical Laboratory Technologist & Pathologists' Assistance, and Technical Occupations in Physical & Life Sciences

### Radiography, Radiation Therapy and Nuclear Medicine Technologies

Most recent entrants have a community college diploma, with specializations through an undergraduate university degree. Medical Radiation Technologists will experience strong growth between 2002 – 2007 in hospitals and medical laboratories. Strong focus on new skills for handling sophisticated imaging technologies. Job titles include:

Cytology Technologist	Radiation Dosimetrist
Diagnostic Cytologist	Radiation Therapist
Genetics Cytologist	Radiation Technologist
Medical Imaging Technologist	Nuclear Medicine
Cardiac Sonography	Technologist/Technician
Echocardiography	Registered Respiratory Care Practitioner
Radiology	Registered Pulmonary Function
Ultrasonograph	Technologist

## **Information Technology**

The latest communications technology has proven useful to the industry with the advent of health care call centres, an innovative means of providing treatment, information, emergency services, and learning.

### **Telehealth**

Telehealth is the use of communications and information technology to deliver health and health care services, information and education through an interactive communication medium. Using computers to send live video, sound, and high-resolution images between two distant locations, health professionals have real time access to education programs, clinical rounds, administrative meetings and the sharing of information such as patient charts and diagnostic images for clinical consultation.

### **Telemedicine**

Telemedicine is the use of machines that are specially designed to measure and record a patient's vital signs at home then transmit the information directly to a hospital nursing station. This electronic remote home care enables health care professionals to monitor a patient's heart rate, temperature, blood pressure, pulse, blood-oxygen levels, and weight several times a day, without the patient ever having to leave home.

### **Patient Care Management**

Technological progress has had a considerable impact on the delivery of care. The ever-increasing rate of introduction of integrated care delivery systems and microchip cards is problematic in terms of protecting personal information, presenting challenges and opportunities in Information Technology.

## **Waste & Water Management**

Biomedical waste results from the provision of human health care, related medical research and teaching, the operation of laboratories, morgues and funeral establishments, the use of biotechnology (such as the production and testing of vaccines), and from mobile health care activities. Focus is on new technologies including; steam sterilization, chemical disinfection, microwave and macrowave technology, with strong emphasis on waste reduction versus disposal.

## **Nanobiotechnologies**

Nanomedicine is the monitoring, repair, construction and control of human systems at the molecular level. Best opportunities exist in research and development of medical devices, treatment and therapies, biopharmaceuticals.

## **Managers & Administration**

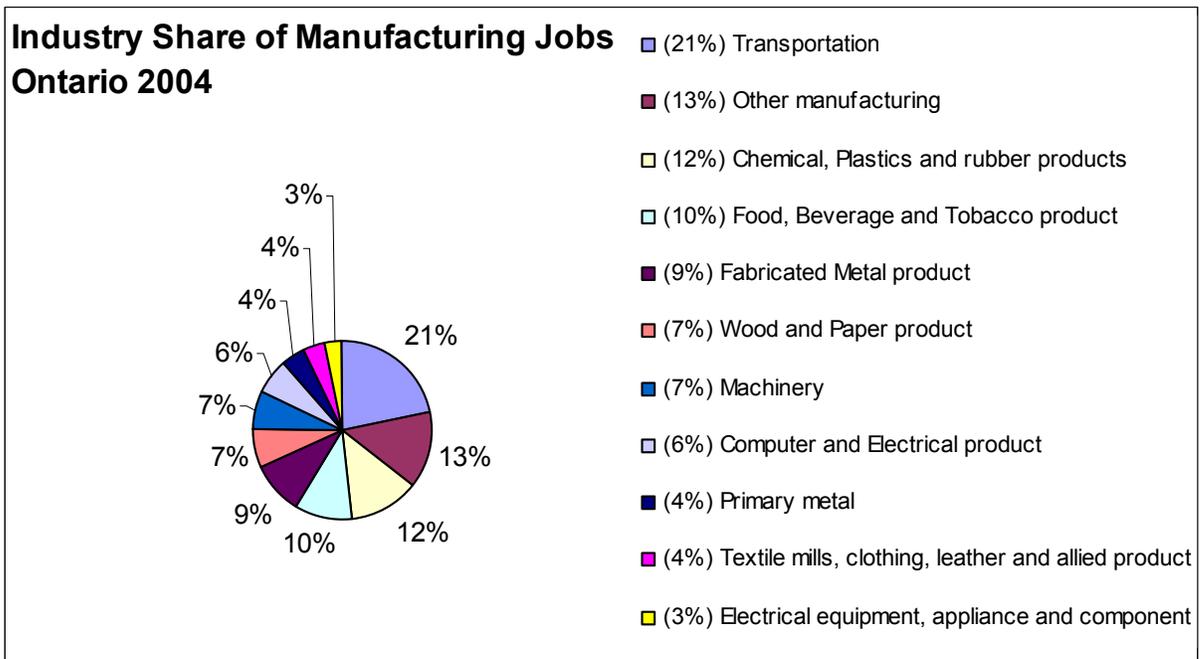
Retirements, areas of specialization and increased regulations will result in increased opportunities in health service management and health care administration. Focus on patient care, streamlining of services and cost management will generate growth in finance, human resources, purchasing and administrative services management.

## **Training & Education**

Regulations and worldwide standards in medicine are constantly on the rise, resulting in continuous training for workers already in place. This combined with rapid advances in technologies, extensive restructuring and reviewing of health care services and support will generate above average growth opportunities in training and education.

Growth Indicators & Trends

- Local (Grand Erie Training & Adjustment Board), Regional (Service Canada), Provincial (Ontario Job Futures) and National (Service Canada) studies indicate that manufacturing is one of the five top industry sectors for new job creation.
- Manufacturing industries have the largest share of employment in the goods-producing sector in Ontario.
- The sector accounts for one-fifth of all economic activity in the province, and about 70% of the sector's products are exported to other provinces and countries.
- In 2004, manufacturing employed over one million people in the province.



Source: Ontario Job Futures

- According to Service Canada Statistics (2004) manufacturing is one of the top five industries for the Brantford area. Specifically highlighted are manufacturers in the 31-33 sectors of NAICS (North America Industry Classification System). This sector comprises establishments primarily engaged in the physical or chemical transformation of materials or substances into new products. Specific manufacturers in this grouping include:
  - 311 Food Manufacturing
  - 325 Chemical Manufacturing
  - 326 Plastics and Rubber Products Manufacturing
  - 327 Non-Metallic Mineral Product Manufacturing
  - 331 Primary Metal Manufacturing
  - 332 Fabricated Metal Product Manufacturing
  - 333 Machinery Manufacturing

## Manufacturing Growth Indicators & Trends cont'd

- Manufacturing skills, abilities and experience have evolved with an increased emphasis on technical skills combined with business and interpersonal skills. Manufacturers of today need people with a mix of creative problem-solving, capabilities, technical know how, business skills and an ability to interact with colleagues and customers.
- Skilled trades are still relied on heavily, but in combination with other technical and business skills.
- Ontario is the leader of Canada's manufacturing sector, and has over 250 firms at the leading edge in Advanced Manufacturing Technologies (AMT) development. AMT involves new manufacturing techniques and machines, combined with information technology, microelectronics, and new organizational practices in the manufacturing process. Source: Ontario Facts <http://www.2ontario.com/industry/home.asp>
- Nanotechnology is a future manufacturing technology that will make products lighter, stronger, cleaner, less expensive and more precise. Ontario's goals for nanotechnology include:
  - › Materials: The creation of new more durable, lighter and easier to use and recyclable materials.
  - › Electronics: Development of smaller components allowing for the design of more powerful computers.
  - › Energy: Increases in the potential of solar power generation.

## Local Opportunities at a Glance

- According to reports and surveys conducted locally, the following information represents key manufacturing sectors for the Brantford-Brant, Haldimand, Norfolk regions:

### **GETAB**

*Primary and Fabricated Metals*

*Machinery Manufacturing*

*Food Industry*

Transportation equipment

### **Brantford-Brant Economic Development**

*Primary and Fabricated Metals*

- Ontario is the most important vehicle-producing jurisdiction in North America. Seven of the world's largest vehicle manufacturers operate 14 plants in Ontario.
- Ontario is a world leader in: injection and blow molding; hydro forming; ferrous and non-ferrous casting; powder metal coating and fabrication; assembly and sub-assembly; systems and component integration; stamping.

*Machinery Manufacturing*

- The machinery manufacturing industry includes more than 1180 process machinery establishments employing in excess of 66,000 highly skilled workers.
- Ontario is at the centre of Canada's \$17.8 billion domestic market for process machinery.

## **Brantford-Brant Economic Development cont'd**

### *Food Industry*

- Ontario produces more than 200 agricultural commodities, a diversity unmatched in most parts of the world. The province is a world leader in food technology research and development.

### Plastics & Rubber products

- Ontario is the hub of Canada's plastics industry, accounting for: 63% of shipments of plastic products; 61% of raw material and machinery shipments; 85% of mould makers; 60% of employment in the Canadian plastics industry; 60% of firms.

### Chemical Manufacturing

- 23 of the 25 largest chemical companies in the world are in Ontario.
- Chemical products are used in Ontario's huge vehicle parts industry, in the fastest growing plastics industry, Ontario's telecommunications and technology-based industries.

### Warehouse Distribution

- Outsourcing of supply chain management or logistics to third party providers is becoming increasingly more prevalent among Ontario businesses.
- Companies across all manufacturing sectors are rapidly adopting business models that reduce or even eliminate inventories.

Human Resources Skills Development Canada defines the Aerospace Industry (SIC 3211) as establishments primarily engaged in manufacturing aircraft and aircraft assemblies, engines, equipment and parts. Aircraft repair establishments are also included in this industry.

Principle activities and products include:

- Aircraft assemblies manufacturing
- Aircraft engines and parts manufacturing
- Aircraft repair services
- Airframes manufacturing
- Guided missile and space vehicle parts manufacturing
- Pontoons, aircraft manufacturing
- Propellers, aircraft manufacturing
- Turbines (aircraft type) manufacturing

### Growth Indicators & Trends

- Approximately 33% of Canada's highly skilled aerospace workforce of 73,000 is employed in Ontario.
- Close to \$5 million has been provided to further enhance Aerospace related initiatives and training in Ontario by the Strategic Skills Initiative.
- Ontario's aerospace products are in such high demand that \$6.2 billion worth of aerospace related revenue was generated in 2004 alone.
- Thanks to favourable conditions on the international market, this industry has registered a better performance level than the national average.

*Source: Statistics Canada, CANSIM.*

- A network of more than 350 Ontario aerospace firms, primarily focused on systems and equipment, provides a wide range of aerospace/aviation design, manufacturing, and product support for the global industry.
- The skilled Ontario workforce, the supportive government climate, and training dollars have positioned Ontario firms to take the lead on new projects such as the USA - led joint strike fighter (JSF or F-35) and the Airbus A-380 aircraft.
- Three-quarters of the Canadian industry's output is exported, with more than two-thirds of exports going to the United States. Currently, seven Canadian firms produce 85 per cent of the exports in the industry. *Source: Industry Canada, Strategis, and HRDC - SOSD, Overviews.*
- According to a recent market forecast by Boeing, worldwide growth in the aircraft industry is expected to average 3.2 per cent over the 1996 to 2015 period. Strong growth is expected for Canadian suppliers of proprietary products and services, especially for commuter and regional aircraft, helicopters and gas-turbine engines. By extension, demand for related parts, subsystems and services will be stimulated.
- Aircraft component costs in Canada are among the lowest in all competing countries including the USA and Japan. Canada has the 2nd lowest precision manufacturing costs in the world, second only to Singapore. *Source: KPMG, Competitive Alternatives, 2006*

## Aerospace Occupational Trends

- The Ontario Aerospace Council has indicated the Ontario industry could create as many as 10,000 entry-level jobs over the next five to eight years.
- Over half of the major skill sets in the aerospace industry, as defined by the National Occupation Classification (NOC), include management, scientific, engineering, technical and skilled trades occupations, while another quarter are process operators and assemblers, not classified as skilled.
- Competition among firms for skilled workers is a significant problem, particularly for small- and medium-sized enterprises. Several companies in the industry, mostly small and medium-sized enterprises, rely on foreign workers as a source of skilled labour. However, this reliance is diminishing as European companies face similar skill shortages. *Source: Industry Canada, 1998*
- Competition from U.S. firms for skilled workers has also caused recruitment challenges for the industry. *Source: Industry Canada, 1998*
- The aircraft and aircraft parts industry work force is, on average, more highly educated and has higher incomes than the labour force in general. Sixty per cent of the industry has a post-secondary education or a diploma compared to 45 per cent in the general work force.
- Several collaborative initiatives, involving industry, government and the educational sector operate in the industry. These initiatives are particularly well developed in Quebec.
- According to a 1997 survey undertaken by the Aerospace Industry Association of Canada (AIAC), the availability of skilled and experienced workers is the top issue facing the industry. A recent survey of aerospace companies found that almost all companies were experiencing at least **some shortages** of skilled scientific, engineering or technical personnel *Source: Industry Canada, 1998*
- Skills shortages were cited in such occupations as machinists, computer numerical control (CNC) programmers, tool and die makers, engineers and engineer technologists.

## Top Occupations

Aircraft assemblers and aircraft assembly inspectors  
Aircraft mechanics and aircraft inspectors  
Aircraft instrument, electrical and avionics mechanics, technicians and inspectors  
Machinists  
Computer numerical control (CNC) programmers  
Machining and tooling inspectors  
Tool and die makers  
Aerospace engineers  
Supervisors, other mechanical and metal products manufacturing  
Secretaries, Administrative Support  
Machine fitters  
Mechanical engineers  
Drafting technologists and technicians

## BIOTECHNOLOGY INDUSTRY

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*Canadian Environmental Protection Act* CEPA defines biotechnology as "the application of science and engineering in the direct or indirect use of living organisms in their natural or modified forms".

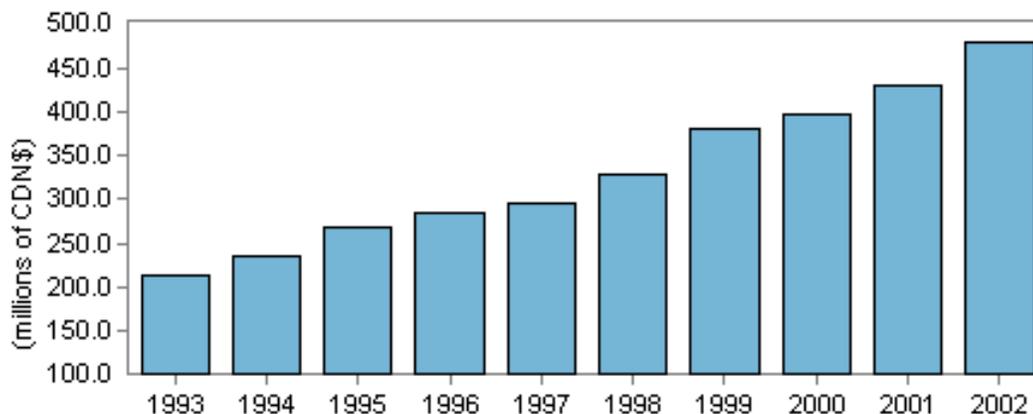
Biotechnology opportunities exist in a variety of sectors including:

- new biotechnology firms (NBFs)
- university departments of microbiology and related disciplines
- research institutes partially or fully engaged in biotechnology research
- established corporations with biotechnology divisions
- venture capital firms
- regulatory bodies
- industrial associations
- scientific bodies
- suppliers of equipment and materials

### Growth Indicators & Trends

- Total employment in the sector over the next five years is expected to grow, as pharmaceuticals are perceived as health care solutions.
- Over a period of 12 years, the growth of the industry has increased by 60%.  
*Source: Statistics Canada, CANSIM*
- Canada leads the world in bio firms per capita, with Ontario home to more than half the country's brand-name pharmaceutical and medical devices industries, and almost half the medical biotechnology industry.
- Ontario has over 100 biotech companies and 60 research centres.
- Ontario's biotech industry boasts revenues of \$1.4 billion CDN in 2001. Pharmaceutical R&D expenditures in Ontario doubled in the last decade to nearly \$480 million in 2002.

### Pharmaceutical R&D Expenditure in Ontario\*



\*Current expenditures exclude capital equipment and depreciation expenditures

Source: PMPRB

## Biotechnology cont'd

- Opportunities exist in;
  - › Biopharmaceutical
  - › Nutraceuticals
  - › Nanobiotechnologies
  - › Health
  - › Food
  - › Beverage
  - › Agriculture
  - › Industrial enzymes (e.g., food, detergents, diagnostics and fine chemicals)
  - › Bioremediation (e.g. soil and sludge)
  - › Biotreatment (e.g. wastewater)
  - › Veterinary vaccines
  - › Agrobiotech products (e.g. transgenic seeds, plants and produce)
  - › Forest biotechnology
  - › Mining and energy sectors (e.g. optimizing mineral/energy recovery)
  - › Pulp and paper (biological wastewater treatment and enzyme treatments)
- Ontario's pharmaceutical industry:
  - › 16,700 employees
  - › Recorded sales of approximately US \$4.4 billion (CDN \$6.2 billion) in 2003
  - › Generic drug manufacturers represent a growing industry segment, which accounted for 37% of all prescriptions filled in Canada in 1994
  - › Key operations by global pharmaceutical giants such as GlaxoSmithKline, Amgen, Biogen, Genzyme, AstraZeneca, Eli Lilly and Pfizer
- Canada accounts for approximately 2% of the world market pharmaceutical sales, and ranks seventh in the Western world in domestic market size. *Source: HRSDC*
- Ontario's medical devices industry:
  - › 22,000 employees
  - › 585 companies
  - › Recorded revenues of US \$3.6 billion (CDN \$5 billion) in 2003
  - › Technology is a major factor in emerging trends
  - › Use of Internet as a means of providing information on drug use and possible side effects on medicines for the benefit of patients and healthcare professionals
  - › On-line pharmacy services to serve their patients electronically for example in managing prescriptions via web sites. *Source: Rx&D*

## Biotechnology Occupational Trends

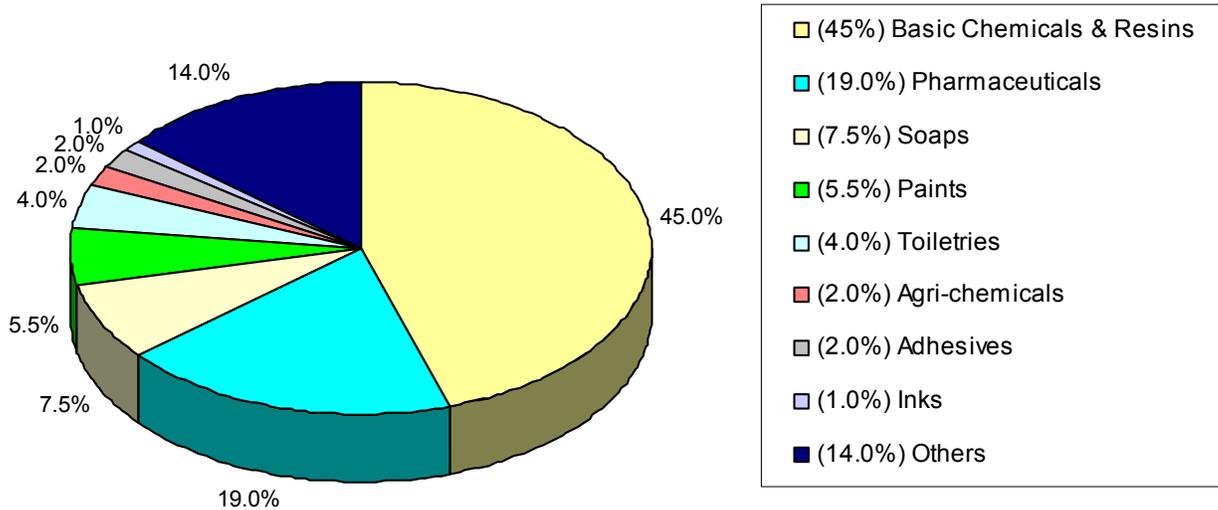
- Employment in the industry can be broken down into five broad categories:
  - › research and development (medical and pharmaceutical)
  - › manufacturing
  - › sales and marketing
  - › distribution
  - › administration
- Ontario and Quebec account for approximately 90% of industry employment.
- The workforce is highly educated—higher education is a prerequisite for many occupations in this field. 43% of the employees have a university degree and at least 85% have a high school diploma.
- Little hiring is done from universities, primarily because companies are looking for individuals with field experience. One way for companies to satisfy their desire for experienced people, while hiring university graduates, is to hire graduates from co-operative programs.
- The level of education and skills required in sales and production will increase. There has been a loss of lower-tech jobs.
- The industry is experiencing difficulty recruiting individuals with expertise in regulatory/government affairs.
- Some generic companies report problems recruiting experienced chemists and product development expertise.
- International competition occurs for top talent. Head-hunting is common.
- Training tends to be focused in four key areas:
  - Good manufacturing practices
  - Good laboratory practices (regulatory requirements \ quality control issues)
  - Specific manufacturing expertise
  - Selling skills \ product line training for sales staff
- Companies are placing greater emphasis on soft skills, which include effective communication and leadership abilities.

## Top Occupations

Chemists  
Chemical plant machine operators  
Chemical technologists and technicians  
Technical sales specialists  
Research scientists  
Analytical chemists  
Specialized manufacturing expertise  
Quality Control  
Regulatory Specialists  
Laboratory Analysis  
Information technology  
Logistics  
Packaging \ Labeling

Growth Indicators & Trends

- Of the 10 largest chemical companies in the world, eight have operations in Ontario.
- Today, 23 of the 25 largest chemical companies in the world are in Ontario.
- During the past decade, the average annual profits of industrial chemical companies in Canada have been double those of companies in the U.S.



Source: Stats Canada, 2002

- A Snapshot of Ontario's chemical industry in 2004:
  - › 52,000 employees
  - › \$18.2 billion in revenues
  - › \$10.2 billion in exports
- Ontario is Canada's biggest chemical producer, accounting for:
  - › More than half of all chemicals (55.8% in 1997) produced in Canada.
  - › Average annual labour productivity growth of over 5% (vs. 2.6% growth in U.S.)
- Ontario is the birthplace of Responsible Care®, the chemical industry's global initiative to ensure the safe and environmentally sound management of products and processes.
- Chemical products are used in Ontario's huge vehicle parts industry, in the fastest growing plastics industry, Ontario's telecommunications and technology based industries.
- Anticipated growth in demand for elastomers (mainly automotive) and reformulated coating and adhesives containing little or no solvent (construction products, durable household products and transport equipment).
- Key location advantages that have historically drawn large chemical companies to Ontario will become magnets for smaller specialty chemical firms in the next few years.
- Exports are estimated to grow at a significant rate.
- Between 1993-2000 the industry experienced an annual compound rate of growth of 12.3%.

## Chemical Occupational Trends

- Ontario's chemical companies include:
  - › Allied manufacturing
  - › Research & Development facilities
  - › Lubricants
  - › Paints
  - › Medical gases for home and hospital use
  - › Laundry detergent
  - › Adhesives
  - › High-tech fabrics and products
  - › Industrial & Commercial Coatings
- Advanced materials impact a wide range of industries, including aerospace, automotive, construction, defense, electronics, medical/biotechnology, packaging and telecommunications. Emerging trends in advanced materials include:
  - › Ceramic materials
  - › Coatings
  - › Composites
  - › Metal alloys
  - › Plastic polymers
  - › Biological materials
- Advances in plastics for automotive industry have resulted in substantial cost reduction achieved through integrated manufacturing process.
- Queens Universities Center for Manufacturing of Advanced Ceramics and Nanomaterials has been focusing on some promising projects such as:
  - › Piezoelectric and electrorestrictive ceramics, actuators, and smart structures
  - › SOFC and ceramics with high electrical conductivity
  - › Advanced ceramics for microwave packaging
  - › A new class of silicon nitride structural ceramics
  - › Thin films and semiconductor ceramics
- Advances in composites have created fibers to replace bulkier materials, saving weight and energy, while reducing the number of parts used and lowering assembly costs.
- Over 130 organizations are currently involved in nanotechnology development in Canada, playing a major role in research and development.

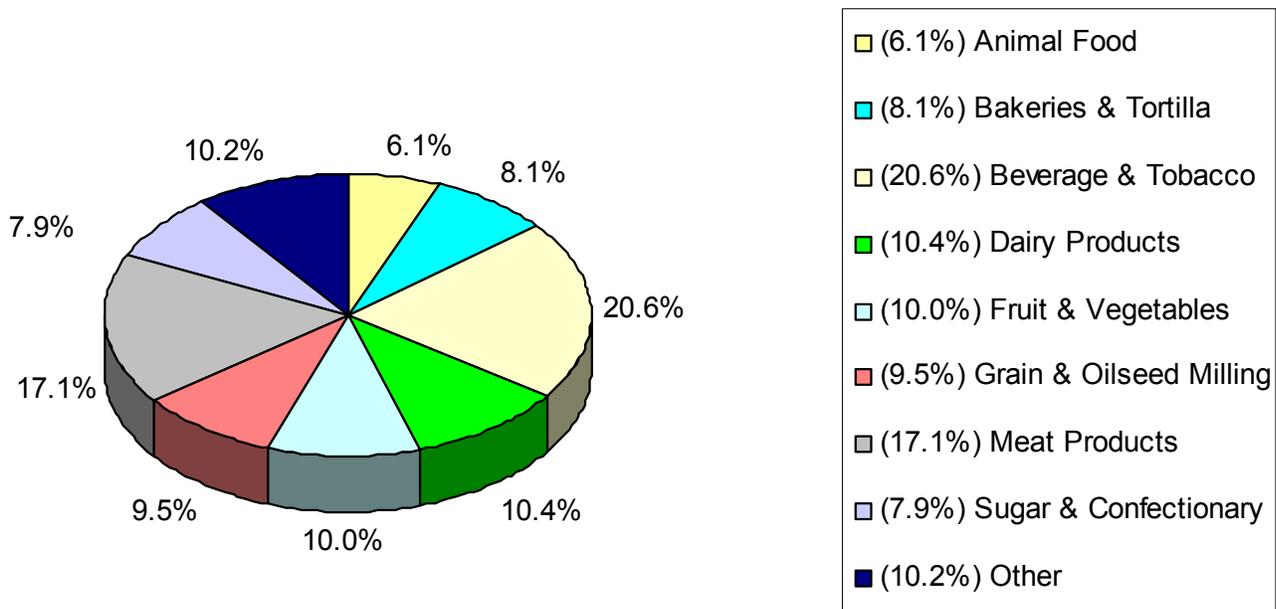
## Top Occupations

Chemical Technologist & Technicians  
Waste Management  
Wastewater Management  
Logistics  
Chemical Engineers  
Central Control & Process Operators  
Materials Scientist  
Chemist  
Metallurgists

Growth Indicators & Trends

- Ministries of Economic Development and Trade and Agriculture and Food have recognized the various food sectors as economic drivers within the province.
- The sector's \$24.5 billion in food manufacturing shipments in 2001 (excluding beverage and tobacco) accounted for 8.6% of total manufacturing activity in Ontario. Its value of shipments is second only to transportation in the manufacturing industry in Ontario. [http://www.omaf.gov.on.ca/english/food/ficb/workforce\\_ahead.htm](http://www.omaf.gov.on.ca/english/food/ficb/workforce_ahead.htm)
- Collectively, food manufacturing industries employ nearly 100,000 workers.
- Among sub-sectors within Ontario food processing, four stand out in particular as dominating the Canadian scene: Ontario-based Grain and Oilseed Milling, Sugar and Confectionery, Fruit and Vegetable Processing, and Baking. All account for more than half of the Canadian value of shipments in each of their sub-sectors.
- GDP, food manufacturing sector, grew overall by 12% from 2000 to 2004.
- State-of-the-art procedures and technology has resulted in a gradual shift from dairy commodities to new value-added products that use milk ingredients/components for food and non-food applications such as: Nutraceuticals, pharmaceuticals, diet products and functional foods. Almost 80 per cent of Canadian milk production is concentrated in Ontario and Quebec. Both provinces combined account for more than 75 per cent of Canada's total value of dairy product shipments.
- Ontario is a world leader in food technology research and development, and the agri-food sector has a proven track record in successful export marketing, with exports worth \$5 billion annually.

**Food Processing Value of Shipments, Ontario 2002**



## Food Manufacturing Local Opportunities at a Glance

- Since 1992 food related companies in Brantford represent 2.5M+ square footage.
- The Toronto perimeter accounts for nearly half of the workers in the food industry in Ontario. Combine that with the South-Eastern region (Waterloo, Wellington, Hamilton, Brant, Haldimand/Norfolk) and these three defined regions represent about two-thirds (62,335) of the Ontario food processing industry’s labour force.
- 39% of Niagara’s food processing labour force is 45 years of age or older, making it the oldest in Ontario. It also has one of the oldest general populations and labour forces in Canada.
- Nutritious potable foods and dairy products, particularly yogurts, are growing, while, at the same time, chocolate items and confectionary, and snack foods, such as potato chips, corn snacks, and pretzels are exhibiting strong growth.

Major Product Categories	Sub-Categories Within Major Categories
<b>Above Average Growth</b>	
sugar	
chocolate and confectionary products	-boxed chocolate/packaged -confections -chocolate bars – all formats -gum
“total nutritious potable foods” (as measured by A. C. Nielsen)	-granola bars / -cereal bars -fruit snacks
snack foods	-snack foods: potato chips, corn snacks, multi-grain, pretzels & variety mix -crackers
bread, bakery, retail bakery and flour milling	-pitas, tortillas & wraps
<b>Average/Moderate Growth</b>	
dairy products	-yogurt -cheddar cheese -eggs
wineries	

*Source: City of Brantford and the County of Brant (Brantford-Brant) Food Industry Segmentation Study*

- Food processing sectors that are complementary to food processing, and are projected to experience above average growth include:
  - sugar
  - cream/dairy
  - cartons / packaging: corrugated, plastic/film
  - flavourings (typically sourced through U.S.)
  - seasonings
  - food processing machinery
  - poultry kill & cut operation

## Food Manufacturing Occupational Trends

- As technology becomes more sophisticated, the need for workers with sufficient education to function in a more complex environment is expected to increase. Automation and computerized equipment and processes require high tech people to operate high tech equipment—demand for low-skilled labour will decrease.
- Training for the food service industry is available through universities and colleges across Canada. However, some of the programs available have been criticized for not being readily accessible or providing the broad and more practical knowledge required in the workplace.
- Employer perception of community colleges is they are reactive rather than proactive in identifying and addressing wider industry needs.
- According to the Ontario Food Processing Industry Labour Study Summary ©
  - Many supervisors are not well equipped for their responsibilities, having moved up through the system from the shop floor based on superior performance and not necessarily because they possessed good leadership skills.
  - Line workers increasingly require analytical problem-solving skills and initiative to take independent action to troubleshoot production issues.
  - One-third of the industry's workforce performs management, supervision, administrative, sales or service functions.
- According to the Ontario Food Producers labour study "Workforce Ahead":
  - Just under 35% of workers in both Ontario's total labour force and food processing as a whole are 45 years of age or older. Six key and highly-skilled occupations in food processing, led by Stationary Engineers, have 50% or more of their workers aged 45 years of age or older.
  - Finding full-time skilled manufacturing workers was reported to be difficult by both Meat and Baking sub-sectors, and the Meat sub-sector also had difficulty finding skilled non-manufacturing workers.
  - In employer interviews, skilled trades including electronic instrument technicians (e.g. programming, robotics), industrial electricians, millwrights, process operators, stationary engineers and high-speed packaging mechanics were consistently identified as occupational classifications in short supply.
  - Quality control occupations (chemists and lab technicians) were also identified as a skill in increasingly short supply.
- Ontario Ministry of Agriculture and Food sites water and waste management as a key challenge for food producers:
  - The food processing industry is faced with major surcharges because the waste-water that it returns contains higher-than-normal BOD counts (Biological Oxygen Demand, a measure of sugar content). Waste water must be dealt with either before the water leaves the facility or by the municipal treatment facilities. Costs incurred by several large companies (alcoholic beverage manufacturers, cheese producers, fruit and vegetable primary processors) are in excess of \$1 million annually as surcharges for excess BOD treatment.
  - Waste disposal or treatment can result in costs as much as \$10,000 - \$15,000 annually for large organizations, while smaller businesses pay several thousand dollars a year.

## **Food Manufacturing Top Occupations**

Logistics

Packaging

Nutrition labeling

Laboratory technicians

Computer programmers

Water & Waste Management

Managers

Process specialists

Specialists in marketing, development, production, export and sales functions

Regulatory Specialists

Regulatory inspectors

Skilled trades including:

- electronic instrument technicians (e.g. programming, robotics)

- industrial electricians

- millwrights

- stationary engineers

- high-speed packaging mechanics

- mechanical maintenance

- electrical maintenance

Canadian Logistics Skills Committee (CLSC) defines Supply Chain Management as encompassing the planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies.

### Growth Indicators & Trends

- It is estimated that as at 2004, there were approximately 701,880 people working in the supply chain sector within Canada (excluding truck drivers). *Source: 2001 Census and Labour Force Surveys*
- The 2004 growth rate for this industry was 20%, with the annual growth rate for warehousing, transportation management, air/ocean freight forwarding, and dedicated carriage (four core logistics sections) being 15% to 25%.
- Based on the current sector population, the total annual demand for employees to fill new jobs, as well as anticipated vacancies resulting from retirements and turnover, is estimated to be approximately 86,330 employees annually, or 12.3% over the next three to five years.
- Demand for specific supply chain positions is expected to remain constant, with growth predicted for positions in logistics information systems, warehousing, customer service and transportation.
- Industry Canada's Logistics – Service Industries Overview Series (2001) report estimates the total revenue for logistics-related firms in 2001 (including, but not limited to 3PL (third-party service providers) firms) to be \$50 billion, 42% of which is trucking. It is estimated that this accounts for approximately 60% of the supply chain sector activity within Canada, with the other 40% being conducted in-house by other organizations (e.g., within manufacturing or retailing organizations).
- There has been a widespread increase in the number of third-party service providers (3PLs), as well as their reliance on contemporary information system services.
- Outsourcing (3PLs) of supply chain management or logistics to third part providers is becoming increasingly more prevalent among Ontario businesses. The most common outsourced activities focus on transportation of goods (i.e., outbound and inbound transportation, and freight forwarding), customs (i.e., brokerage and clearance) and, to a lesser degree, warehousing.
- Focusing specifically on 3PLs, the gross revenue for the North American 3PL market (as per The North American 3PL Market report (2004), was \$65 billion in 2002.
- Technology and the resulting information management requirements are identified as key business drivers currently impacting the supply chain function and are expected to maintain a presence in the future.
- Web-based businesses are outsourcing their order management, warehousing, packaging and customer support functions.

## Logistics Occupational Trends

- A review of the major human resources challenges in the sector reveals a limited pool of skilled employees and the need to develop skill sets to cope with emerging technologies and a global marketplace.
- There is a general lack of awareness and understanding of the supply chain sector and its occupations. Students, new workforce entrants and those in career transition typically do not enter the supply chain sector by design—simply because they do not know it exists.
- While process and production technology change has been profound, information management systems and related technology have evolved at a more rapid pace and have had a more profound impact on job design and skill requirements.
- The growth rate of other industry sectors, especially logistics-intensive industries, drives growth rates for the supply chain sector. 3PL growth is also a reflection of the increasing sophistication of supply chain needs, as organizations employ and leverage experts.
- Environmental and border-crossing requirements are currently having a substantial impact on the logistics industry. The most common regulatory areas having a significant impact over the last three years included:
  - › International regulations governing border crossing, customs, U.S. import security, and international trade
  - › Provincial regulations (e.g., inter-provincial trade barriers, labour, and occupational health and safety)
  - › Environmental regulations (e.g., Kyoto Protocol)
  - › Food regulations (e.g., U.S. Food and Drug Administration (FDA) and Canadian Food Inspection Agency (CFIA) regulations)
  - › Transportation regulations (e.g., hours of service, weights, material storage and dangerous goods)
- Customs-Trade Partnership Against Terrorism (C-TPAT) and the North American Free Trade Agreement (NAFTA) were the most commonly cited specific regulations having an impact on the sector.
- Skills and knowledge critical to the industry include:
  - › Financial planning / Cost analysis
  - › Forecasting
  - › Knowledge of international business practices
  - › Knowledge of laws and regulations
  - › Knowledge of logistics functions and the supply chain
  - › Mechanical skills
  - › Optimization of workflow
  - › Knowledge of transportation
  - › Languages
- The most common challenge faced by academic institutions in meeting increased demand for the logistics industry is hiring sufficient qualified instructors.

## **Logistics Top Occupations**

Manager-level positions

functional managers

general managers

project managers

Supervisor and analyst roles

Inventory

inventory analysts

planners

managers

Purchasing

Purchasers

Contractors

buyers

Logistics and supply chain specialists

supply chain and logistics analysts

planners

engineers

technical sales

account / client management

Warehousing and operations

warehouse supervisors

managers

general warehousing and operational personnel

Instructors / trainers at the post secondary level

Regulatory Specialists

Logistics information systems positions

systems and data

Growth Indicator & Trends

- Ontario is home to a unique cluster of plastics companies encompassing the full length of the supply chain — from resin and material suppliers and mould-makers to processors, as well as a range of end-user industries including automotive, electronics, packaging and construction.
- Ontario is the hub of Canada's plastics industry, accounting for:
  - 63% of shipments of plastic products
  - 61% of raw material and machinery shipments
  - 85% of mould makers
  - 60% of employment in the Canadian plastics industry
  - 60% of firms

*Source: Ontario Investment Service ([www.2ontario.com](http://www.2ontario.com)), April 2005*
- Ontario and Canada are the lowest cost jurisdictions of all the G-7 nation countries, offering the lowest costs across a variety of growth sectors including plastics. Costs in Canada are 14.5 % below the US average.
- In total, the North American industry employs nearly 1.1 million people and has close to \$290 billion in annual manufacturing shipments. Canadian manufacturing shipments are approximately 10% of the U.S. total.
- In 2002, more than 75% of the products manufactured by Ontario's plastics industry were used in packaging (as a substitute for glass and other materials); construction (as an alternative to wood); and transportation (as an alternative to steel and other metals). Another 5% of the industry's shipments went to the telecommunications and electronics industries, which are becoming the fastest growing markets for plastics.
- The value of Canadian manufacturing shipments for plastic and rubber products grew at an average annual rate of 10% between 1999 and 2003.
- The fastest growing segments (on a value of manufacturing shipments basis) were foams, bottles, “Other plastic products”, and auto parts. These product segments also exhibited high growth in the number of establishments and number of employees. Sectors where the value of manufacturing shipments grew slower than the average include laminated packaging (much of it for the food industry), films and bags, and “Other rubber products”.
- A snapshot of Ontario's plastics industry in 2001:
 

Shipments by processors:	\$13 billion
Shipment by raw material/machinery/mould suppliers:	\$4.5 billion
Number of firms:	2,250
Total employment:	83,000
- The plastics and rubber sector is a large and fragmented industry featuring nearly 18,000 establishments in North America, thousands of products, dozens of processing technologies, and a variety of polymer and other raw material requirements. The industry includes polymer manufacturers, additive suppliers, concentrate producers, compounders, plastics processors, machinery manufacturers, mould makers, and plastics recyclers.
- In 2000, the rubber products industry accounted for 0.35% of Canada’s total GDP. In absolute numbers, this industry contributed \$2.7 billion to a total national GDP of \$786.9 billion. *Source: Statistics Canada, CANSIM*

## Plastics & Rubber cont'd

- Overall resin demand growth at 3.2% indicates a projected growth in the following sectors:
  - › Bottles
  - › Auto/transportation parts (includes all of the injection moulded parts as well as other parts made for cars, trucks, railcars, buses, airplanes, boats, and other vehicles. Specific product examples include: bumpers, seats, seat covers, body panels, under-the-hood parts, instrument panels, interior trim, and exterior trim)
  - › Sidings, Windows
  - › Packaging films, bags
  - › Foams
  - › Pipe
  - › Rubber products (tires, hoses) *Source: CPIA*

- Canadian plastics companies are represented in four priority sectors including:
  - › automobile parts manufacturers
  - › plastic bags manufacturers
  - › plastic films manufacturers
  - › plastic bottles manufacturers *Source: Strategis*

- There are a total of about 237 plastic bag manufacturing (NAICS 326111) establishments in Canada. Nearly 50% of these are located in Ontario.
- There are a total of about 173 plastic film and sheet manufacturing (NAICS 326114) establishments in Canada. Over 40% of these are located in Ontario.
- There are a total of about 87 plastic bottle manufacturing establishments in Canada. Nearly 50% of these are located in Ontario.

- Plastic Processing Technologies include:

<b>Processing Technologies</b>	<b>Product Examples</b>
Film extrusion (blown films)	Bags. Packaging films
Injection moulding	Auto parts, rigid food containers, electronic parts, etc.
Profile extrusion	Pipe, house siding, window frames, eaves
Blow moulding	Bottles, containers
Sheet extrusion	Packaging sheets, boards
Foam extrusion	Packaging foams, insulation
Calendared sheet extrusion	Packaging sheets (e.g., blister packaging)
Plastisol processing	Flooring products (tiles, sheet), coatings for gloves
Rotomoulding	Large items - playground equipment, containers
Lamination, film	Multi-layer packaging films for cheese, meats, etc.
Compression moulding	Auto body panel, plastic plates (high quality)
Spray/pour	Furniture foam
Open moulding	Furniture foams, auto seat foams
Filament winding	Light weight pressure containers
Pultrusion	Fencing
Thermoforming	Packaging

## Plastics & Rubber Local Opportunities at a Glance

- A review of the rubber and plastics sector by the City of Brantford Economic Development Department identified Packing, Construction, Transportation, Electrical & Electronics as sectors best suited for investment and growth in Brantford Brant.
- Automotive plastic parts will be complementary to transportation, logistics, and warehousing companies given the extent that motor vehicle assembly rely on just-in-time (JIT) and zero-inventory (ZI) production strategies. Some existing transportation equipment providers in Brantford - Brant may also benefit from synergies with plastic parts manufacturers.
- New plastic films and bags manufacturers also be aligned with Brantford - Brant's growing food sector, and could help pull new food sector businesses into the region. There are already about 22 businesses involved in food products manufacturing in Brantford - Brant accounting for over 1,400 jobs in the region. In addition:
  - plastic films could be aligned with the warehousing/distribution sector
  - plastic bags could offer synergies with the regional retail sector
  - plastic bottles could support beverage producers and chemicals producers

## Occupational Trends

- Projected growth in the plastics and rubber industry will generate growth in complementary businesses, including but not limited to automotive assembly plants, distribution and logistics companies and other plastics users, (notably those in the food sector).
- The rising demand for rubber products is likely to create opportunities for younger workers who have background in computer science, engineering, and sales and marketing. Because of the industries on-going automation and innovation, it offers employment opportunities for prospective workers with knowledge of advanced equipment and methods.
- The majority of workers in the rubber products industry (75.5%) were between the ages of 25 and 50, almost 10 percentage points lower than the all industry figure of 66%. *Source: Statistics Canada, Census 1996*
- With respect to trade certification, 14% of rubber product industry employees were trade certified, compared to the national figure of only 12%. *Source: Statistics Canada, Census 1996*

## Top Occupations

Waste & wastewater management  
Air quality management  
Logistics  
Packaging  
Laboratory technicians  
Process specialists  
Electronic instrument technicians (e.g. programming, robotics)  
Skilled trades including:  
    industrial electricians  
    millwrights  
    stationary engineers  
    high-speed packaging mechanics  
    mechanical & electrical maintenance

The primary metal industry includes all establishments primarily engaged in smelting and refining ferrous and non-ferrous metals such as aluminium, copper, zinc, lead, nickel, titanium, tin and their alloys. This industry represents numerous sub-industries, often referred to as “divisions”. The following are the primary divisions and the various sectors they service.

### Growth Trends & Indicators

#### Steel Division

- Roughly 70 % of steel making capacity and 75% of employment are situated in the province of Ontario. Recent capital investments have focused on new information technology for process and inventory control, testing, customer service, new work methods and management structures
- Technology is transforming the processes for producing steel worldwide—Canadian manufacturers face a constant need for technological innovation

#### Steel Pipe & Tube Division

- The auto industry is expected to increase purchases of tubular products as an alternative to cast products. In particular, it is increasing use of tubular products in side panels and other parts of the vehicle where structural integrity is an issue and weight needs to be reduced

#### Aluminium Division

- Aluminium is in high demand for transportation purposes such as aviation, rail cars, beverage can and automotive markets

#### Copper Division

- Copper use in automotive and electronic applications has increased significantly in recent years and is likely to continue to grow, but copper use is being challenged by fibre optics in some telecommunications applications

#### Zinc Division

- Use of zinc as a coating for iron and steel products is growing, especially in the auto industry, which is using newer steel formulations to fight corrosion. Galvanizing accounts for nearly half of worldwide zinc consumption

#### Titanium Division

- Primarily subject to demand factors in end product industries such as the aircraft industry

#### Nickel Division

- Demand for nickel-based products are sensitive to sales of end products (such as automobiles and appliances) and sales of stainless steel pipe used in demanding applications such as oil and gas pipelines

## Primary & Fabricated Metals Occupational Trends

- Primary metal industry employment is concentrated in the provinces of Ontario (50%) and Quebec (30%) while British Columbia accounts for 10% of the employment in the industry, and the Prairie Provinces 9% of employment. *Source: Statistics Canada, LFS*
- Two major occupational groups dominate employment in the primary metal industry. The largest category is occupations unique to processing, manufacturing and utilities, which account for 48% of total employment. At 22%, the second largest category is occupations unique to trades, transport and equipment operators. *Source: Statistics Canada, LFS*
- Technological change in cars, appliances, electronics products, computers and other consumer goods will affect the relative demand for iron, aluminium, copper, zinc and lead.
- The use of new zinc alloys in the stamping and pressing make short production runs of stamped materials possible. New production machinery makes it possible to change dies quickly enough to make short runs possible and economical.
- Total quality management has been introduced in the primary metal industry. This change has increased the need for soft skills and team training, especially for front-line supervisors, and has increased the need for literacy and numeracy training among production workers.
- As the average age of workers in the industry is relatively high, large numbers of workers will be eligible to retire over the next five years. The projected above average retirement rate, coupled with advances in technology, will see an increase in positions requiring higher levels of skill and education.
- Soft skills and leadership skills, especially for supervisory personnel, has become a priority, especially in the context of looser work rules and fewer layers of direct supervision.
- A significant proportion of metal distributed in North America is sold through "service centres," integrated intermediaries which provide shipping, ordering, quality control, warehousing, cutting to size and consulting services on the use of the product. In this case, metal producers ship directly to service centres, which interact with the customer. Service centres handle over 30% of steel shipments in North America, and increasingly provide value-added services such as cutting to length. Service centres will play an increasingly important role, resulting in an increased demand in logistics and laboratory technicians and technologists.

## PRIMARY AND FABRICATED METALS – AUTOMOTIVE

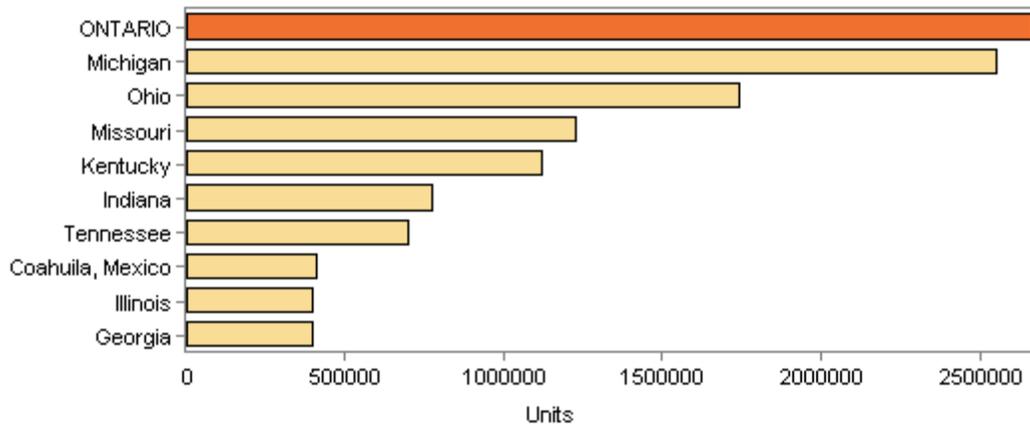
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The automotive parts and accessories industry (SIC 325) consists of the automotive parts industry, both original equipment manufacturers (OEM) and aftermarket and replacement parts.

### GROWTH INDICATORS & TRENDS

- Ontario is the most important vehicle producing jurisdiction in North America. Seven of the world's largest vehicle manufacturers operate 14 plants in Ontario.

#### 2004 Light Vehicle Production



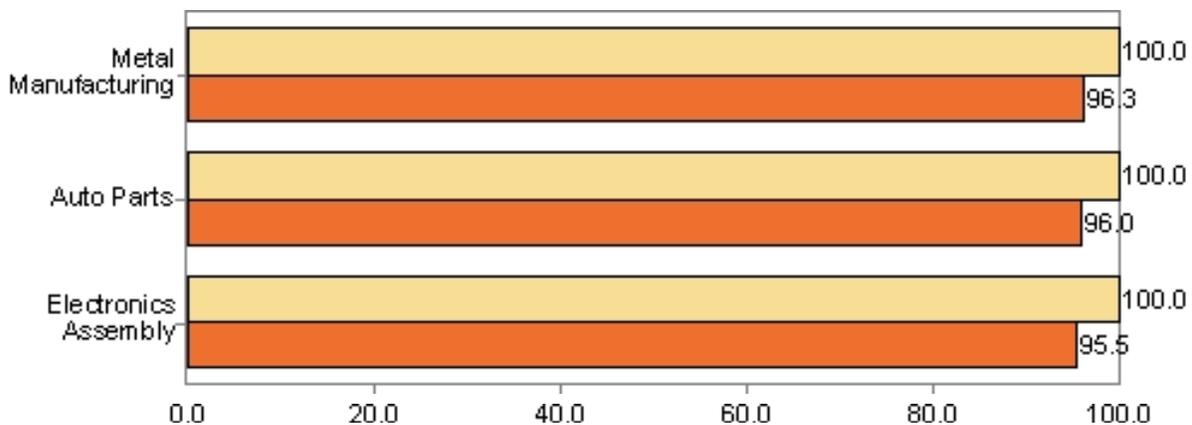
Source: Ward's AutoInfoBank, February 2005

- The motor vehicle industry represents over 20% of all investments in the manufacturing sector, and generates over 500,000 jobs.
- The over 550 Canadian assembly plants have managed to get a share of the North American market that is in excess of 16%.
- 73% of parts firms are in Ontario, with 14% in Quebec, and 6% in British Columbia.
- Starting in 1992, the motor vehicle parts and accessories manufacturing industry have shown strong growth. Over a period of 15 years, the cumulative growth rate in the motor vehicle parts industry has almost doubled. *Source: Statistics Canada, CANSIM*
- Ontario's vehicle assembly industry:
  - 45,000 highly trained workers
  - CAN \$63 billion in shipments in 2003
  - Produces every sixth vehicle built in North America
  - Plants that are consistent winners of J.D. Power & Associates' Initial Quality Study and The Harbour Report productivity survey (@1/3 of all awards)
- Ontario's auto parts industry:
  - 90,000 highly educated and skilled workers
  - Over 400 innovative facilities including giant multinationals like Ontario-based Magna International, Dana Corporation and Delphi Automotive, and dynamic home-grown companies like the Woodbridge Group, Westcast Industries and Linamar
  - CAN \$32 billion in shipments in 2003

## Primary and Fabricated Metals – Automotive cont'd

- Ontario is a world leader in:
  - › injection and blow molding
  - › hydro forming
  - › ferrous and non-ferrous casting
  - › powder metal coating and fabrication
  - › assembly and sub-assembly
  - › systems and component integration
  - › stamping
- The cost of making vehicle parts as well as conducting research and development is lower in Ontario than the US. For manufacturing the cost advantage is about 4%.

### Business Cost Advantage by Type of Operation (Index: US=100)



Source: KPMG Competitive Alternatives Online Cost Model, 2005

## Occupational Trends

- › The majority of employment is in Ontario, where the bulk of automotive manufacturing facilities exist. Virtually all of the large Tier 1 production and employment is concentrated in Ontario.
- › Greatest level of skill shortages in this industry are in trades, especially skilled production tradespersons who are familiar with new computerized production machinery, and in some computerized design specialties. Interviews with industry officials and literature on the industry make it clear that the industry regards the impending shortage of skilled tradespersons as the single most important impediment to its ability to grow over the next two to seven years.
- › At present, educational programs for advanced personnel are not very well developed in Canada. New initiatives are being established in Canada around research and development of new products and processes. This will provide opportunities requiring increased levels of post secondary education.
- › As more advanced and complex processes and technologies are adopted, the need for highly developed skills will grow exponentially. Continuous learning is a necessity for manufacturers if they want to remain competitive.

## Primary & Fabricated Metals Automotive Occupational Trends cont'd

- Retirements over the next two to seven years (APMA) of skilled tradespersons in this sector are relatively high. The impending shortage of skilled trades is made more serious by the fact that most of these skilled trades are also in demand in other parts of the manufacturing sector and the automotive sector must compete for a relatively limited supply.
- Recruiting skilled workers from abroad is complicated due to problems associated with entry of spouses and families and recognition of skills and certification from non-Canadian sources.
- Basic skills for entry level workers have evolved to include requisite skills in polymer science, computers, communications and mathematics.
- Rapid technological change, especially in the plastics portion of the industry, new warehousing and communications technologies such as Electronic Data Interchange (EDI) and evolving technologies in rapid prototyping will create a need for highly adaptive and skilled workers.
- Emerging environmental trends will result in changes to all aspects of production and will concentrate on: new fuel technologies, new electronics, new power train, nanotechnology (new materials), fabrication research in areas such as hydro forming and new equipment.
- Interviews with industry officials suggest that shortages of managerial skills are a constraint; several companies in the industry (e.g., Magna, Woodbridge) have reacted to this problem by setting up in-house management development programs.
- Management programs need to be integrated with work organization programs such as lean production, just in time, and Total Quality Management.

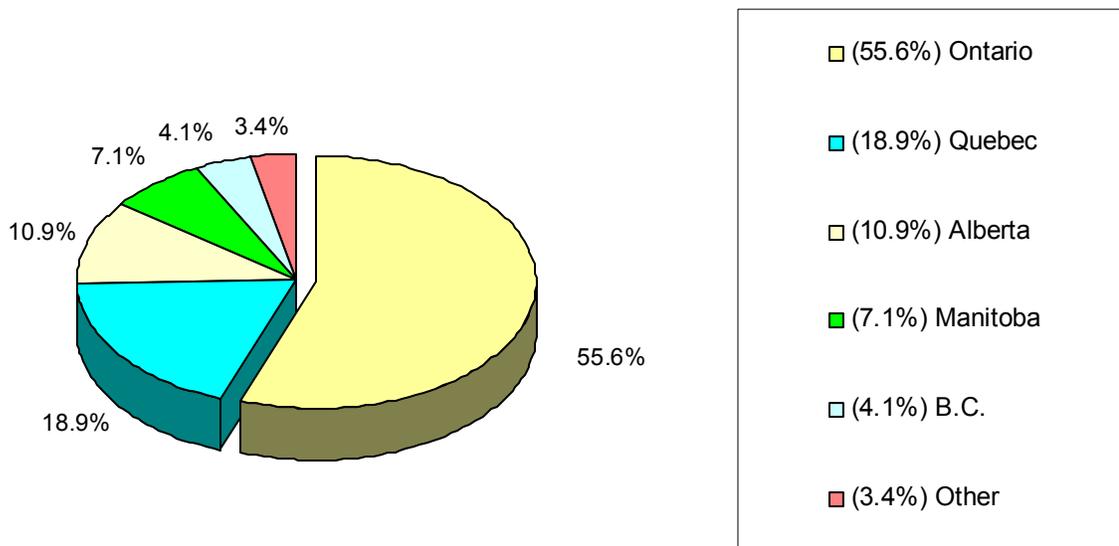
## Top Occupations

Engineers	Research & Development
Mould & Pattern makers	Waste Management
Maintenance personnel	Logistics
Millwrights	Manufacturing Managers
Tool & Die	Laboratory Technicians/Technologists
Industrial Electricians	Robotics & Automation
Industrial Mechanics	Inspectors & Testers
Pipefitters	
Welders	

Growth Indicators & Trends

- The machinery manufacturing industry includes more than 1180 process machinery establishments employing in excess of 66,000 highly skilled workers.
- Ontario is at the centre of Canada's \$17.8 billion domestic market for process machinery.
- Provincial industry comprises large corporations and innovative young firms engaged in manufacturing industrial and commercial machinery.
- Solid economic growth in most of the world's industrialized economies is helping to drive growth globally.

**Machinery Shipments 2000**



Source: Ontario Ministry of Economic Development and Trade, Ontario Process Machinery Update, 2001

### Growth Indicators & Trends

- Four industry groups account for approximately 75% of total consumption of packaging products: Food (\$2.7 billion in 1997), Beverages (\$1.4 billion in 1997), Chemicals and Chemical Products and Paper and Paper Products.
- Among the main types of packaging products used are plastic containers and packaging materials, corrugated boxes, metal containers, set-up and folding boxes and glass containers. These five types of packaging products accounted for just over 70% of total consumption of packaging products by manufacturing industries in Canada in 1997.
- Ontario and Quebec account for over three-quarters of manufacturing industries' consumption of packaging products. The packaging industry has grown to close to \$6.3 Billion in 2002. Ontario accounts for 49% of employment in packaging related industries.  
*Source: Packaging Association of Canada Labour Market Study*
- Canada's top-ranked food and beverage manufacturers are headquartered in Toronto. Food plants in Toronto include: Kraft Canada, Maple Leafs Foods, Nestle Canada, Redpath Sugars, Parmalat, Campbell Soup Co., George Weston Ltd., Molson Breweries, Redpath Sugars, Canada Bread, Gay Lea Foods, and Wrigley (Canada) Inc.
- Efforts to reduce packaging costs and protect the environment will drive growth for flexible packaging. Flexible packaging also has storage, production, performance, and distribution advantages over rigid and other packaging mediums.
- The growth rate of plastic bottle manufacturing is growing at 10% per year. Paperboard container manufacturing contributed the most growth, contributing 27% of overall growth in manufacturing. *Source: Packaging Association of Canada Labour Market Study*
- Technological advances encompass controlled-atmosphere and modified-atmosphere packaging (CAP/MAP), which result in a much longer shelf life for produce, meats, and other products; novel resins such as metallocenes that are stronger and more breathable than traditional films; and convenience features such as zippered bags and specialized closures.
- The packaging cluster includes a wide diversity of firms engaged in more traditional transport packaging (e.g., pallet manufacturing), product containers (e.g., metal cans, glass jars, plastic tubs), and unique or distinct consumer packaging (e.g., juice pouches, ice cream cartons, custom printing and labeling). This "cluster" is moving towards increased technological sophistication in;
  - Fabrication & Finishing
  - Printing & data integration and management
  - Inks / Adhesives / Fasteners
- Pharmaceutical packaging design is increasingly becoming more complex. An aging population is creating the need for senior-friendly packaging features in the very near future. Key trends affecting pharmaceutical packaging include:
  - Aging population
  - Focus on decreasing medication errors
  - Increasing number of biological drugs
  - Intensified competition and consolidation in the pharmaceutical industry
  - Increased regulatory scrutiny

## Packaging Occupational Trends

- The packaging industry is extremely complex and covers a multiple of career opportunities;
  - › Design (container, labels, graphics and logos)
  - › Manufacture (paper, paperboard, plastics, woods, metals, glass)
  - › Processing (tracking and coding, regulations)
  - › Quality (research & development, new technologies)
  - › Environmental trends (waste management, compliance)
  - › Technologies (shelf life, counterfeit prevention, safety, tracking, data management.)
  - › Skilled trades (Maintenance Mechanics, Tool & Die)
  - › Business (logistics, management)
- Career opportunities exist in many areas of specialization including production, research & development, purchasing and marketing. Employment can be found in:
  - › Planning and developing new packages, or improving present packages to meet standards of quality, function and cost.
  - › Drawing detailed specifications and descriptive materials for new package ideas and ways to improve existing packages.
  - › Conducting necessary tests of new and improved packages and packaging materials.
  - › Translating marketing recommendations and concepts into realistic packaging specifications for all company products.
  - › Marketing of new merchandise techniques and developing display materials of new packages or packaging changes.
- The move from traditional manufacturing methods to using advanced technologies has resulted in skill shortages in multiple occupations. Companies with advanced technologies are experiencing severe skill shortage for machine operators, industrial engineers, machinists, production managers, computer professionals and CAD technicians. *Source: Statistics Canada*
- The highest level of employment growth will be in digital prepress (25%), other prepress (21%), electronic control technicians (20%), plate maker (16%), moulding machine operator (11%), and quality control (10%). Difficulty is expected in hiring most of the printing occupations, digital CAD CAM, electronic control technicians, packaging mechanics and mould, tool and die makers.

## Top Occupations

Mechanical Engineers & Mechanical Engineering Technologists & Technicians  
Chemical Technologists and Technicians (rubber and plastics industries)  
Electrical and Electronics Engineering Technologists and Technicians  
Machinists, Tool & Die Makers (with high speed processing knowledge)  
Technical Sales Specialists  
Package Design Technologies & Label Design Technologies  
Finishers  
Regulatory Specialists  
Management  
Logistics  
Waste management

### Growth Indicators & Trends

- Ontario currently has more than 2,000 companies that constitute its environment industry, with leading-edge technologies to provide solutions to problems involving the use of air, land, water and energy.
- Ontario companies in this sector offer expertise in the areas of:
  - › Water and wastewater treatment/water conservation
  - › Solid and hazardous waste/recycling
  - › Site remediation and reclamation
  - › Energy conservation/renewables
  - › Air pollution control
  - › Monitoring/instrumentation/labs
- Industry is evolving away from an orientation of pollution control to one of pollution prevention and waste minimization.
- The waste management industry is a major contributor to the Ontario economy. A recent survey by OCETA (the Ontario Center for Environmental Technology Advancement) indicated that 49% of sales of products and services of the industry were to Ontario with 18% to the rest of Canada and 35% exported.
- Global demand in water and wastewater treatment is growing at 2.7% per year. At \$122 billion, the water and wastewater sector represents 40% of the world's environmental market, in a sub-sector of particular Canadian expertise.
- In 2002 Ontario's environment industry generated total revenues of \$6.9 billion capturing a 44% share of the Canadian market.

### OCCUPATIONAL TRENDS

- Many industries are increasingly examining waste and water management in an effort to reduce treatment/disposal costs and lower liability and insurance costs.
- Emerging trends and technologies include;
  - › Bioremediation (e.g. soil and sludge)
  - › Biotreatment
  - › Water and wastewater treatment technologies (largest market)
  - › Liquid and solid waste management
  - › Environmental instrumentation, geomatics and analysis
  - › Engineering and consulting services
  - › Environmental laboratory and analytical sub sector estimated at \$221 million in 1998
  - › Health Care Industry (e.g. infectious waste, pathological waste, sharps, genotoxic waste, chemical waste, pressurized containers, radioactive waste, wastes with high content of heavy metals such as mercury, pharmaceutical, biomedical) Focus is on new technologies including: steam sterilization, chemical disinfection, microwave and macrowave technology, with strong emphasis on waste reduction versus disposal

## WHAT'S HOT! IN ENGINEERING OCCUPATIONS

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Engineering Occupations are predominant in emerging occupations and industry sectors. Those sectors projected to have above average growth include:

- Health Care
- Manufacturing
  - Food
  - Pharmaceuticals/ Nutraceuticals
  - Plastics & Rubber
  - Machinery
  - Nanotechnologies
  - Chemicals
  - Machinery
  - Automotive
  - Aerospace
- Packaging Technologies
- Logistics
- Waste / Water Management
- Alternative Fuels

### **Civil Engineers (NOC 213)**

- i.e. environmental engineer, hydraulic engineer, water management engineer

### **Mechanical Engineers (NOC 213)**

- i.e. (HVAC) engineer, mechanical maintenance engineer, tool engineer, automotive engineer, robotics engineer

### **Mechanical Engineering Technologists and Technicians (NOC 2232)**

- i.e. heating designer, HVAC technologist, tool and die designer, mould designer

### **Electrical and Electronics Engineers (NOC 2232)**

- i.e. design engineer, electrical, instrumentation engineer, control systems engineer

### **Electrical & Electronics Engineering Technologists / Technicians (NOC 2241)**

- i.e. electrical engineering technician/technologist, electronics engineering technologist, communications technologist, electronics manufacturing technologist

### **Chemical Engineers (NOC 213)**

- i.e. Biochemical, biotechnical, industrial waste/waste treatment

### **Software Engineers (NOC 2173)**

- i.e. computer software engineer, telecommunications software engineer, application architect, software testing engineer

## WHAT'S HOT! IN LABORATORY OCCUPATIONS

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Occupations in laboratory related sectors are predominant in emerging occupations and industry sectors. Those sectors projected to have above average growth include:

- Health Care
- Manufacturing
  - Food
  - Pharmaceuticals/ Nutraceuticals
  - Plastics & Rubber
  - Machinery
  - Nanotechnologies
  - Chemicals
  - Machinery
  - Automotive
  - Aerospace
- Packaging Technologies
- Logistics
- Waste / Wastewater Management
- Alternative Fuels

### **Chemical Engineers (NOC 213)**

- i.e. Biochemical, biotechnical, industrial waste/waste treatment

### **Chemical Technologists and Technicians (NOC 2211)**

- i.e. chemical laboratory analyst, quality control technician (food/chemical), chemical / food technologist, biochemistry technologist,

### **Medical Laboratory Technicians (NOC 3212)**

- i.e. medical laboratory aide/assistant

### **Electroencephalographic and Other Diagnostic Technologists, n.e.c. (NOC 3218)**

- i.e. EMG / ENP / END / EP / EEG technologist

### **Other Assisting Occupations in Support of Health Services (NOC 3141)**

- i.e. clinical laboratory helper, physiotherapy/rehabilitation assistant, optical laboratory assistant

### **Dental Technologists, Technicians and Laboratory Bench Workers (NOC 3223)**

- i.e. dental technician, dental laboratory bench worker

### **Geological and Mineral Technologists and Technicians (NOC 2212)**

- i.e. groundwater technologist, welding technologist

- Shortages in skilled trades will be impacted by two key variables:
  - › The number of projected retirements
  - › The number of students entering skilled trades apprenticeships
- Skilled trade shortage is not limited to Ontario's manufacturing sectors. It is affecting numerous other sectors including construction, mining, metal, machining etc.
- "Taking Action on Skilled Trades" report released by the Ontario Chamber of Commerce in September 2005 indicates "Ontario will face a shortage of about 100,000 skilled trade workers in the manufacturing sector over the next 15 years, due to retirement."
- The Ontario Chamber of Commerce has identified a 430% (four hundred and thirty) return on investment of apprenticeship training. That is, for every one dollar invested in training a manufacturing apprentice, there is a \$4.30 return on that investment.
- Consider the following:
  - › 45% of all steel tradespersons are expected to retire in 2006 (careersintrades.ca)
  - › 50,000 skilled metal trades people will be needed between 2005-2010 (Canadian Tooling and Machining Industry)
  - › Canada's automotive industry will need 30,000 new skills workers, due to retirements AND there is a predicted shortage of 14,468 machining industry jobs over the next 10 years (Automotive Parts Manufacturing Association)
  - › In the next two decades, 40% of new jobs will be in the skilled trades and technologies (skillswork.com)
- Skilled trade continues to be a dominant presence in occupations predicted to have good to above average occupational prospects.
- In the context of this report, a review was made of (a) sectors experiencing growth and related trades requirements and (b) skilled trade occupations experiencing growth due to retirements.
- Those trades projected to have above average growth include:
  - HVAC (heating, ventilating & air conditioning) technologist (NOC 7313)**
  - Millwrights / Industrial Mechanic Millwright (NOC 7311)**
  - Tool & Die (NOC 7232)**
  - Industrial Electricians (NOC 7242)**
  - Industrial Mechanics (NOC 7311)**
  - Pipefitters (NOC 7263)**
  - Welders (NOC 7265)**
  - Stationary engineers (NOC 735)**
  - High-speed packaging mechanics (NOC n/a)**
  - Machinists (7231)**

## APPENDIX A – CLASSIFICATION SYSTEMS

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### NAICS

Developed in cooperation with Canada and Mexico, the North American Industry Classification System (NAICS) is a statistical program which focuses on emerging economic activities. The system groups establishments into industries based on the activity in which they are primarily engaged. Establishments using similar raw material inputs, similar capital equipment, and similar labor are classified in the same industry. In other words, establishments that do similar things in similar ways are classified together.

NAICS coding structure uses a six digit hierarchical coding system to classify all economic activity into twenty industry sectors. Five sectors are mainly goods-producing sectors and fifteen are entirely services-producing sectors. This six digit hierarchical structure allows greater coding flexibility than the four digit structure of the SIC.

In all cases, the main hierarchical code is refined with a series of sub-codes that provides a more detailed explanation of both the industry sector and the occupational activities associated within the sector.

### SIC

The Canadian Standard Industrial Classification for Companies and Enterprises, 1980 (SIC-C) is a system for classifying companies and enterprises according to the activity(ies) in which they are engaged. It is used to facilitate the collection, tabulation, presentation and analysis of financial statistics and related data. As a reference manual, the SIC-C provides a classification structure; a classified index, which includes the definition of sub segments and examples to clarify the content of each sub segment; an alphabetical index; and comparison tables between this classification and the establishment-based classification (1980 SIC-E).

Please note that the SIC-C has been replaced by NAICS Canada. Once implementation of NAICS Canada is complete, the SIC-C will be discontinued.

### NOC

Since its introduction in 1992, the National Occupational Classification system continues to be the authoritative resource on occupational information in Canada.

The NOC 2001 provides a standardized framework for organizing the world of work in a manageable, understandable and coherent system and has been successfully implemented in a number of major applications over the past decade. It is based on extensive occupational research, analysis and consultation conducted across the country, reflecting the changes in the Canadian labour market.

The NOC 2001 Web site contains the classification structure and descriptions of 520 occupational unit groups and includes over 30,000 occupational titles.