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Environmental Careers Organization



Municipal Water and Waste Management

LABOUR MARKET STUDY

Planning for Today, Preparing for Tomorrow



ELM

ENVIRONMENTAL LABOUR MARKET RESEARCH

ECO CANADA

ECO Canada develops programs that help individuals build meaningful environmental careers, provides employers with resources to find and keep the best environmental practitioners, and informs educators and governments of employment trends to ensure the ongoing prosperity of this growing sector.



ELM RESEARCH

ELM (Environmental Labour Market) Research investigates current environmental skill and labour trends within the environmental profession and provides up-to-date, timely and relevant insights that can be applied in policy, business, and educational contexts. The complete collection of ELM reports is available at www.eco.ca.

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Finally, this report would not have been possible without the participation of those who generously offered their valuable time to complete the survey and take part in the focus groups. These individuals came from all over the country and represented a number of different municipality sizes, types of facilities, and geographic locations. It is for these people that ECO Canada reserves its final thanks.

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Executive Summary

The Municipal Water & Waste Management Labour Market Study provides Canada's most extensive report examining practitioners working in municipal water, wastewater, and solid waste facilities.

The objectives of this study are:

- i. To provide an accurate profile of practitioners working in municipal water, wastewater, and solid waste management facilities;
- ii. To determine supply of and demand for qualified practitioners in municipal water, wastewater, and solid waste facilities;
- iii. To determine future trends and projections for the industry;
- iv. To provide insight into critical HR issues, challenges, and solutions to problems that Canadian municipalities routinely face regarding practitioners working in water, wastewater, and solid waste management facilities.

Key Findings

An Aging Workforce

The labour force working in both water/wastewater and solid waste management facilities share the same key demographics. Both are primarily made up of men, with women representing less than 20% of every occupation examined. A large portion is approaching the average age of retirement, and perhaps most alarming, is the prevalence of workers in positions critical to facility operation nearing retirement. For example, in both water/wastewater treatment and solid waste management, over 40% of facility managers are over 50 years of age.

Shallow Candidate Pools for Some Critical Positions

The most challenging position for water/wastewater facilities to recruit and retain was intermediate operators or operators in training (OITs). Over 50% of facilities surveyed reported hiring for these positions over the past 2 years, and close to 30% expect to hire another in the next year. Facilities in the study reported recruitment was becoming increasingly difficult for all positions and experience levels.

While solid waste management facilities reported that skilled labour positions were the most in demand, no recruitment difficulties for these positions was expressed. Conversely, the recruitment of facility managers was a notable challenge, as 59% of facilities surveyed reported difficulty in hiring for this role.

A History of Employee Turnover

For the past three years, turnover in water/wastewater treatment facilities has been nearly double that of solid waste facilities. One-third of the facilities surveyed had difficulties retaining workers at the intermediate experience level. However, both water/wastewater treatment and solid waste management facilities have reported much lower turnover in 2009 than in the previous two years. This is likely due to the economic conditions of 2008/2009, and should revert back to the levels of 2007 and 2008, which for each industry were double the current turnover.

Water and Wastewater Human Resource Issues

All municipalities, regardless of size and facility level, reported a few common issues regarding the labour market for water and wastewater treatment facilities. Municipality size, location and facility level all factor into the recruitment, retention and training challenges a facility encounters.

1. Shortage of qualified operators and operators-in-training (OITs)

This current shortage shows signs of only increasing as waves of retirements continue to take qualified workers from this workforce. Level 3 and 4 facilities, in particular, struggle to find operators certified to the level of their facility. The labour shortage will be magnified in small, remote communities that have fewer resources, a smaller labour pool to draw from, and lose top talent to larger communities.

2. Employee expertise neglected through lack of resource and training support

Many municipalities feel the training resources available to them are insufficient for workers to maintain training and certifications, and that there is a lack of appropriate training courses to satisfy the professional development needs of practitioners.

3. Lack of 'essential skilled' employees

The lack of "soft skill" training has led to considerable gaps in the industry in areas such as leadership skills, communication skills, and computer skills which hinders practitioner's abilities to move up in the workforce. Focus group participants labeled lack of recognition of training and experiences, both between provinces and internationally, is a considerable hindrance to operator mobility.

Solid Waste Human Resource Issues

Municipal solid waste management facilities did not have as many challenges relating to finding qualified practitioners as water and wastewater facilities.

1. Lack of awareness and interest for solid waste occupations

The main issue that municipalities identified relating to solid waste management was ensuring that careers in the solid waste industry are recognized as respectable careers that promote environmental health and protection. Many municipalities use a combination of clever, imaginative and functional activities to keep practitioners engaged, which helps to reduce the challenge of worker retention.

2. Limited career growth in smaller facilities

Career paths for solid waste management practitioners are not always clear, especially in smaller facilities. Focus groups identified larger facilities with more roles and positions do not have this problem, and practitioners have an easier time advancing their careers.

3. Training and development opportunities fail to address core skills

Training and professional development for practitioners in solid waste facilities tend to focus on technical aspects of the industry. Many municipalities feel that administrative and communication skills are not adequately represented in their workforce due to the lack of suitable training opportunities in these areas.

About ECO Canada

ECO Canada (Environmental Careers Organization) is a not-for-profit corporation that assists the Canadian environmental sector in implementing sound human resource development policies. Since its founding in 1992, ECO Canada has taken great strides towards developing a national human resources strategy that is focused on the needs of environmental employers, practitioners, educators, and students.

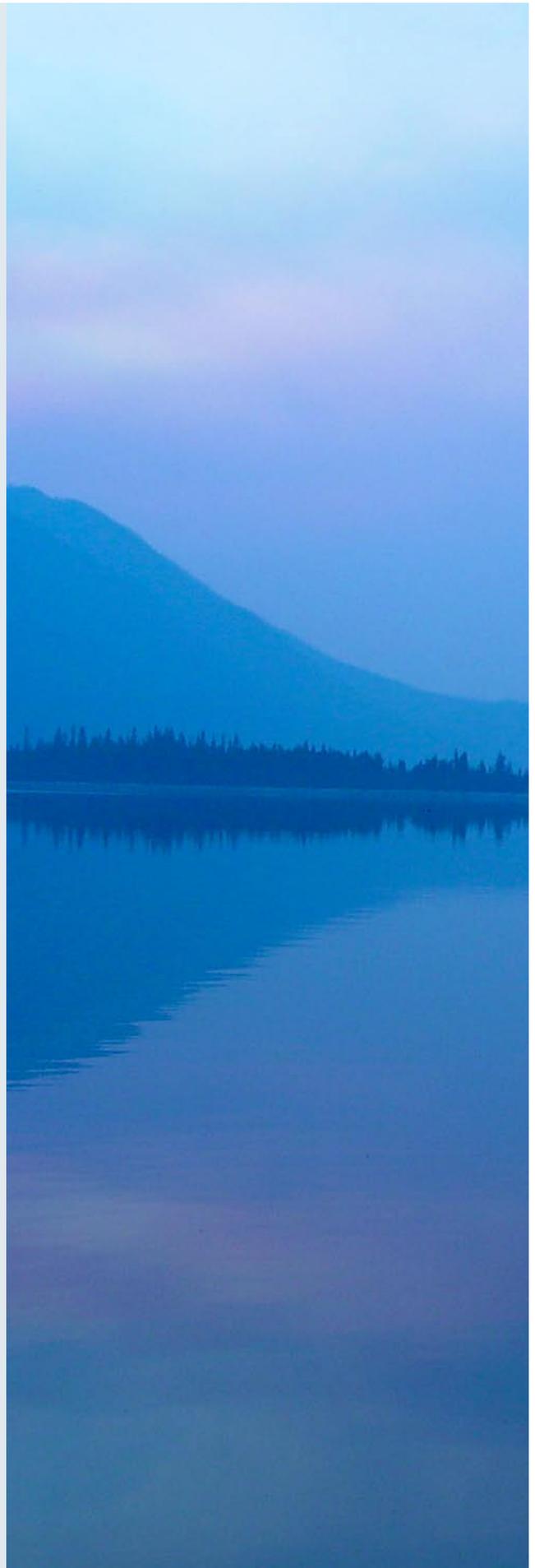
ECO Canada is one of thirty-two national sector councils that were established with federal start-up funding to bring employers, workers, educators, and governments together to address human resource challenges facing the Canadian economy.

The key objectives of ECO Canada and other sector councils are to:

- Develop and update national occupational standards for skills and training.
- Promote employment opportunities via a highly skilled workforce.
- Meet industry requirements for qualified new practitioners.
- Provide labour market projections and information on current and emerging trends in the environmental sector for employers, educators, youth, and governments.
- Improve the dialogue between industry and the academic community.
- Address labour market entry problems and school-to-work transition difficulties encountered by youth.

ECO Canada's mission is "to ensure an adequate supply of people with the demonstrated skills and knowledge required to meet the environmental human resource needs of the public and private sectors".

ECO Canada's programs can be accessed by visiting www.eco.ca.





Study Objectives

The Federation of Canadian Municipalities estimates Canadian municipalities are facing a deficit of \$120 billion dollars regarding their current infrastructure, a total which is growing by \$2 billion a year¹. Water, wastewater, and solid waste facilities account for almost \$40 billion of this estimated deficit, and all have the ability to negatively affect both human and environmental health. Unfortunately, municipalities often do not have the capacity to fund upgrades or new facilities on their own.

In response to this issue, Infrastructure Canada created the *Building Canada Fund* to assist Canadian municipalities in upgrading and replacing their existing infrastructure. This plan has identified environmental issues such as clean drinking water, wastewater treatment, and solid waste management as a priority for Canadian municipalities in the future.

While there has been progress on securing funding for new facilities, there has not been an examination of the labour market required to work in these facilities. Incidents in Walkerton, Ontario and North Battleford, Saskatchewan illustrate the consequences that are possible when services such as water and wastewater treatment are not managed by practitioners operating at their highest efficiency.

The Municipal Water & Waste Management Labour Market Study was designed to identify and investigate critical human resource issues facing Canadian municipalities in regards to environmental practitioners employed in municipal water, wastewater, and solid waste facilities.

The information in this report is intended to provide a better understanding of labour supply patterns and trends, ultimately enhancing retention and improving recruitment because of clearer career pathways. The study aims to facilitate the development of human resource policies that will ultimately aid in a strengthened workforce within municipal water, wastewater, and solid waste facilities.

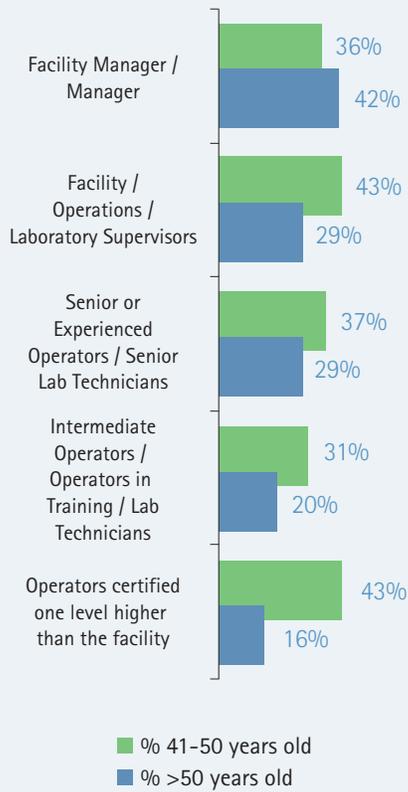
¹ See "Danger Ahead: The Coming Collapse of Canada's Municipal Infrastructure" – (Mirza, 2007), full report can be found at <http://www.fcm.ca/CMFiles/mdeficit1OPT-792008-3425.pdf>

Workforce Profiles

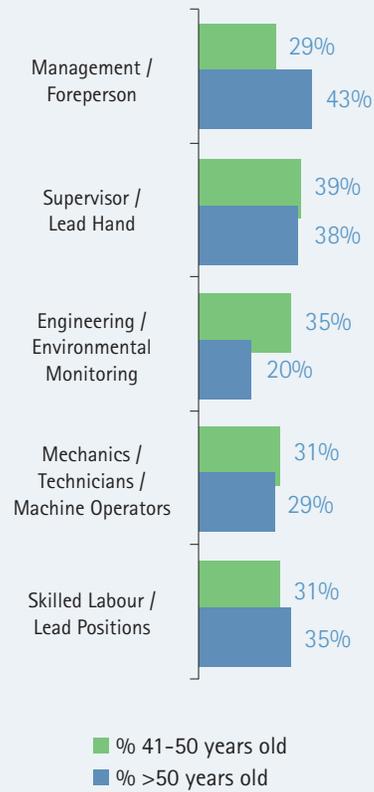
Age

The labour force working in water/wastewater facilities is nearing retirement and many of the most critical positions are going to be particularly affected. The industry, in general, is "top heavy" with a large portion of managers and senior personnel over the age of 50 years old. There was considerable mention in focus groups as well as the National Working Group that there will be a crunch for qualified practitioners once the current senior personnel retire.

Age Comparison - Water/Wastewater Treatment



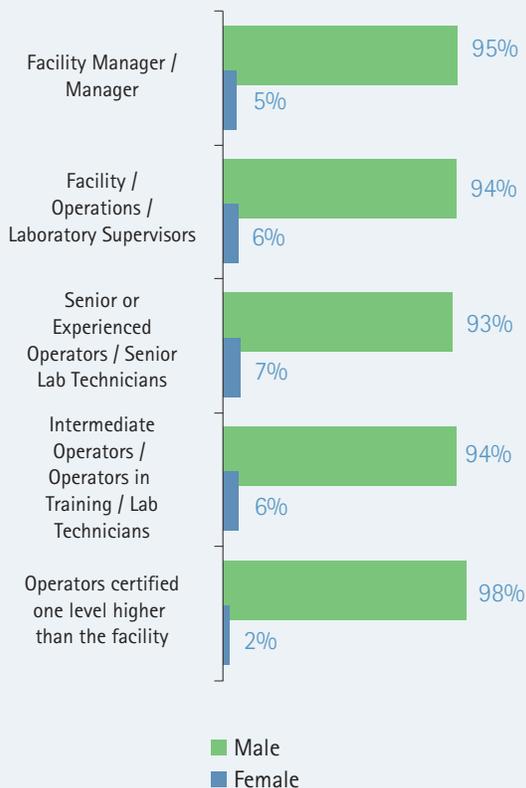
Age Comparison - Solid Waste Management



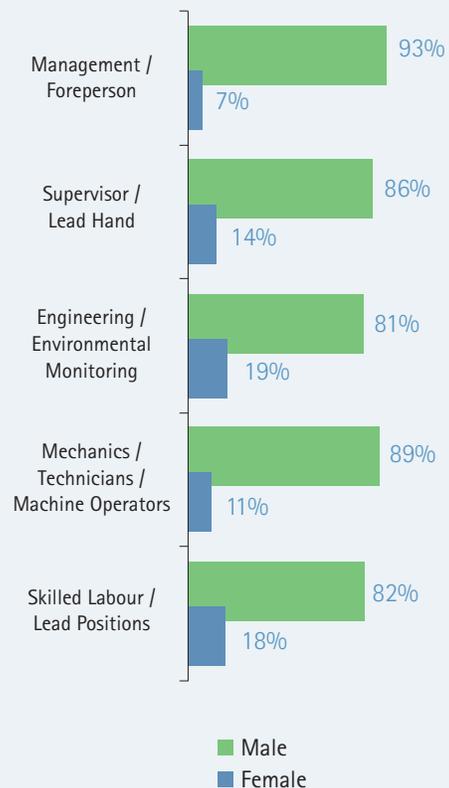
Gender

The labour force working in water/wastewater and solid waste management facilities is primarily composed of men. Focus group and National Working Group participants felt the lack of female representation is due to poor marketing. Careers in both water/wastewater treatment and solid waste management are seen as male-dominated jobs, and though women have the skills to do the job, many are not aware of the career possibilities. Some participants reflected this could also be the result of a legacy of hiring managers who have bias towards male candidates.

Gender Comparison - Water/Wastewater Treatment

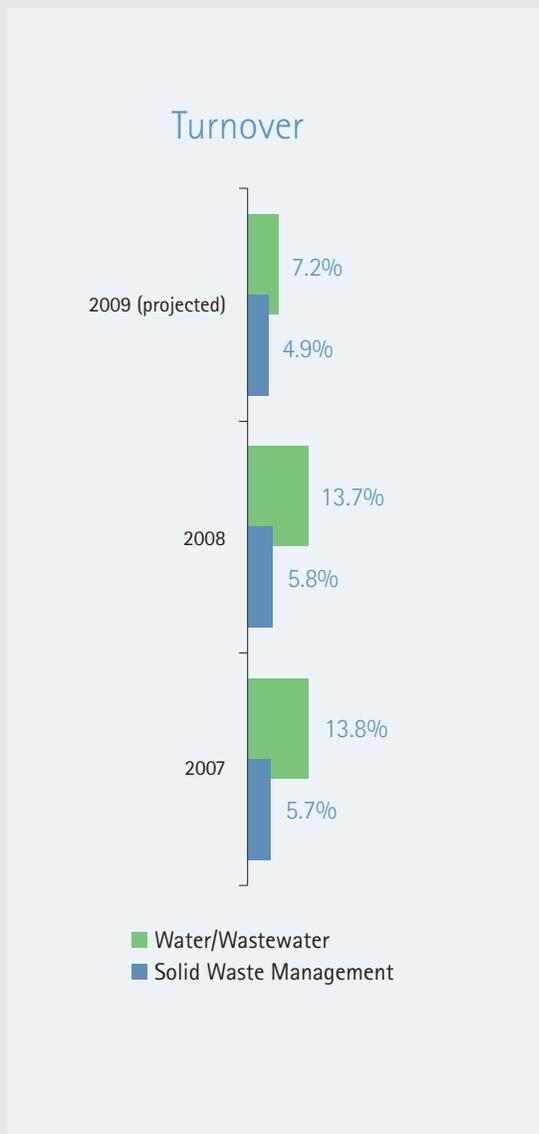


Gender Comparison - Solid Waste Management



Workforce Supply and Demand

Both water/wastewater and solid waste management facilities reported lower turnover in 2009 than the previous two years. The National Working Group members attributed this primarily to the current economic conditions. Many older practitioners who are close to retirement are staying in their positions to recover some lost retirement income, and younger practitioners are not moving around as much due to fewer opportunities in both the public and private sectors. Also, in times of economic uncertainty, the public sector is more appealing due to the job stability.



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CASE STUDY



Irving Leblanc

Irving Leblanc is familiar with the unique issues that First Nations communities deal with in regard to their water and wastewater treatment. As someone who's been involved with the Assembly of First Nations as an Advisor on water and wastewater treatment, he has seen many of the problems first hand. He lists education as one of the main challenges that First Nations communities face in regard to their water and wastewater operators. "Educational requirements are a big problem," he states, "with only 60% of First Nations children getting to high school, requiring a grade 12 education limits the available labour pool". As a result of this, only an estimated 60% of operators are certified up to the level of their plant. Skills such as math and science are becoming increasingly important in the operation of water and wastewater facilities, and there is a significant skill gap in these areas in many First Nations communities. "Getting elementary school children interested in math and science" is an effective approach, Irving states, and "showing students careers in water and wastewater treatment at an early age is critical".

Irving also claims that small and remote communities often face the challenge of a smaller labour pool, and require training that is not applicable to their communities. He suggests that "tailoring the training specific for small or remote communities without compromising the health and safety of the community would be a way to overcome the educational hurdles that traditional training creates". He believes that the requirements for facilities that exist in small and remote communities should be different than in larger, more complex facilities. This could involve different strategies such as tailoring general equivalency diplomas for specific careers in water and wastewater. Qualified operators being poached by surrounding municipalities and industries is also an important issue for First Nations communities, as Irving states "once operators are qualified, many are poached by surrounding municipalities or private industries like resource development because the salary provided by the community isn't comparable to what municipalities or private industry can pay". Stressing the importance of the role of water/wastewater operator in the community could help raise the profile of the water/wastewater operator and ensure that they are supported financially and morally by the community.

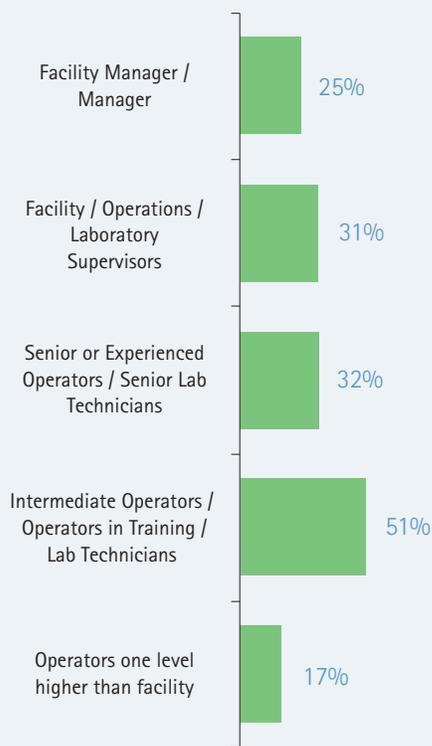
"At the end of the day," Irving says, "all aspects of water and wastewater treatment are grossly under-funded by the various levels of government, which has impacts from facilities to operator training."

[Click here for more information on the Assembly of First Nations.](#)

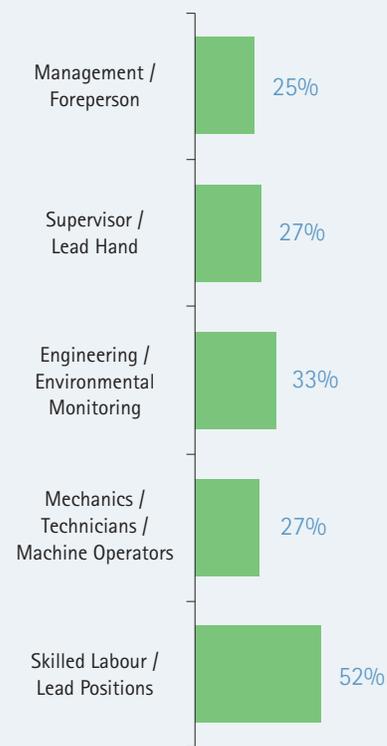
Water/wastewater facilities reported that over half (51%) of the facilities surveyed had to recruit intermediate operators or operators in training over the last 2 years. In water/wastewater treatment, there is the consensus that younger workers value a work/life balance and that rotating 12-hour shifts and on-call duty does not accommodate their lifestyles. Over half (52%) the solid waste facilities surveyed had to recruit skilled labour positions over the last 2 years. They also reported that many of their workers who have a well-rounded skill set have an easier time finding employment opportunities in the private sector.

The consensus of participants was that these positions are more typically held by younger workers who do not put the same importance on company loyalty as older workers, and therefore have more of an inclination to look for better offers and opportunities.

Positions Recruited for Within the Past Two Years - Water/Wastewater

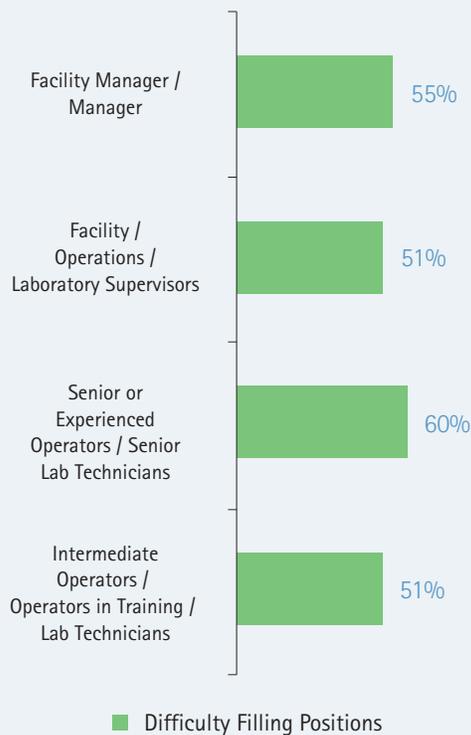


Positions Recruited for Within the Past Two Years - Solid Waste Management

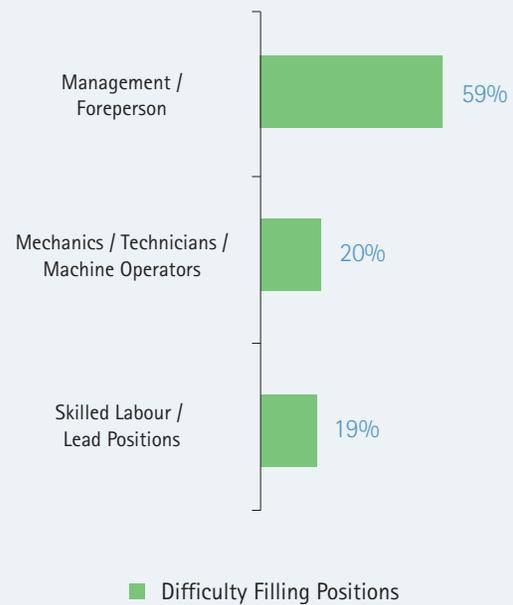


Water/wastewater facilities reported difficulty hiring for all positions, with at least 50% of facilities reporting difficulty hiring for all positions. This shows a general lack of qualified practitioners at all levels, and this trend will worsen in the near future when senior people retire. Solid waste management facilities did not share this difficulty for the most part, but had significant problems hiring management personnel. One possible cause for this difficulty is that management personnel are increasingly required to run more complex facilities and that these facilities require an education level that is not in common supply in the lower ranks of the workforce.

Water/Wastewater Treatment - Current Recruitment Challenges



Solid Waste Management - Current Recruitment Challenges





Doug Cooper

As an educator with over 25 years of human resource management experience, Doug Cooper sees a lot of the challenges in the municipal water and wastewater treatment industry. He is the President of World Water and Wastewater Solutions Ltd., a national organization that strives to provide relevant and engaging training opportunities for water and wastewater operators. One of the biggest challenges he sees is that both operators and municipalities need to accept that training is a necessary part of a water/wastewater operator's job. "A good percentage of operators do not appreciate the opportunity to develop their skills through mandatory training," states Doug, and "communities are still primarily investing in operator training because it's required, not necessarily to improve competency in targeted areas". The result of this is that some critical skills such as leadership and management are lacking in the workforce. These skills are often not a requirement for an operator to keep their certification, and municipalities are often only in a position to provide funds for the bare minimum training needed. The skill gaps that result can create issues with operators looking to advance their career, or municipalities which cannot find an adequate supply of qualified managers.

With the upcoming wave of retirements in the municipal water and wastewater industry (up to 50% of the estimated workforce will be retired in the next 5-10 years), Doug and his staff are working to develop programs that directly address the needs of municipalities and worker skill requirements. He believes that "operators are going to become a commodity after this wave of retirements hit," and those with the aforementioned "soft skills" will be at a premium. They also recognize the need to develop "fast-tracked" programs that help municipalities get qualified practitioners sooner than through traditional training routes.

Doug believes that provincial and federal governments will need to make changes in the near future regarding how they look at this workforce. Currently, each province has its own training and certification programs, which do not easily recognize experience from other provinces and leads to a decreased mobility of operators in the water and wastewater sector. This reduces the ability to recruit operators from other provinces and may lead to significant shortages in the labour supply over time. The fact that careers in water and wastewater are not looked upon as a legitimate trade also hurts the ability for people interested in careers in the industry to obtain assistance and necessary training. Doug states that this needs to be addressed at a higher level than the municipal level and that "water treatment is a national challenge, and we need a change in mindset to come up with solutions".

[Click here for more information on World Water and Wastewater Solution's subsidiary, the Ontario Water Operator Training Centre and the training courses offered.](#)

Water and Wastewater HR Issues

Issues that could not be examined in the quantitative survey were taken to focus groups and the National Working Group to provide in-depth analysis on. The following observations were taken from five online focus groups.

Recruitment

Challenges

Many municipalities indicated that hiring qualified operators was the biggest challenge they deal with in their water and wastewater treatment facilities. Participants mentioned that response to job advertisements is generally favourable, but the number of qualified applicants who apply is small. Some respondents mentioned that there are not enough training opportunities to become certified, and the ones that exist are expensive. A practitioner in this field cannot operate without the appropriate certification, so the burden of training either falls on the potential operator themselves, or the municipality.

Facility level, geographic location, and provincial and federal government policies also play a significant role in the recruitment challenges of operators in the following ways:

- A shortage of workers who have level 3 or 4 certification for the larger municipality level 3 and 4 facilities;
- Smaller municipalities lose top talent to larger municipalities that offer greater career growth and better pay;
- Lack of a federal level certificate prevents mobility between provinces and territories. Many provinces do not recognize certificates and experience earned in other provinces. This is also true of international applicants, where similar experience and certifications in other countries often is not considered even when applying for entry-level positions.

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Lack of a federal level certificate prevents mobility between provinces and territories.

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Strategies

In response to these challenges, some municipalities have come up with creative solutions to address their recruitment issues. Some of the strategies include:

- Hire new workers based on intangibles. Where applicable, municipalities find it useful to hire young, trainable candidates for temporary positions and evaluate the new hire before investing long-term in their future;
- Reinforce the criticality of the position to public health and safety in order to elevate the image of the occupations;
- Where the position of water/wastewater operator is flexible or part-time, recruit local retired residents with strong ties to the community. This has proven to be particularly effective in small or remote communities with limited labour pools;
- Highlight career development opportunities such as higher certification during the recruitment process.

Retention

Challenges

Retention is not quite the challenge that recruitment is in the municipal water and wastewater industry. The specific challenges that were examined are:

- Workers being lured by other municipalities or private industry for higher wages. One respondent recapped the problem by stating *“We bring someone in, train them, and in two years they move to a bigger municipality once they receive their certification”*. Many remote municipalities that have industries like mining or oil nearby also report losing employees to these industries;
- Operator's disdain for shift work and on-call responsibilities;
- As their workforce nears retirement, municipalities are not only in danger of losing a large majority of their staff, many of them are in danger of losing a wealth of experience-based knowledge as much of this knowledge is not documented or retained.

Strategies

While retention of practitioners does not present the same challenge as recruitment, municipalities have taken steps to minimize employee turnover and increase employee motivation. Some of the successful retention strategies used by municipalities include:

- Promote job variety. Some municipalities rotate job responsibilities and some even offer the flexibility to work in different departments to keep workers engaged and provide them with a wider selection of experiences. Where applicable, many municipalities will transfer operators between their water and wastewater facilities on a yearly basis;
- Reinforce perks that come with working in an essential service to the community. There is a high level of job security because "people will always need water and create waste";
- Promote career progression through higher education and training. In larger facilities with room for progression, offering operators the ability to upgrade their training often has a cascading effect driving other employees to pursue higher training as well. In smaller facilities with not as much room for advancement, offering training above the minimum can engage workers and provide incentive to stay longer than they might stay otherwise.

Training

Challenge

Training and ongoing professional development for water and wastewater operators remains a challenge for many municipalities. Some of the main points that were identified were:

- Lack of available resources for training. With course fees, travel, accommodations and lost productivity, some respondents estimate the cost for employee professional development to be as high as 10% of their annual salary;
- Course offerings address only Certified Education Unit (CEU) requirements. Training and development opportunities focus more around technical skills and fail to address to skills gaps in essential computer and communication skills.

Strategies

Many municipalities identified hands-on courses as the optimal method of professional development, but unfortunately these courses are not always available. Other municipalities have resorted to online courses to maintain their operators CEUs and certifications. While the courses have the benefit of being widely available and inexpensive, they cannot substitute for hands-on training and many workers do not possess the necessary computer savvy.

Skills Shortage

While the certification that operators must obtain meets many of the technical needs for their positions, many human resource specialists and facility managers feel there are significant skill gaps within the municipal water/wastewater treatment labour market. Skills gaps generally fell into two categories:

- Computer skills;
- 'Soft' skills, which often refer to communication and human resources-based skills. While these skills are seen as important components of an ideal worker, they are rarely emphasized during the interview process and training.

Employers have a hard time addressing these shortages as much of the training operators need to receive involves technical skills relating to their jobs, and workers do not receive CEUs for completing computer or soft skills training. The lack of these skills hinders a facility's ability to operate optimally as these skills are routinely part of the job (i.e. much of the data and reports are electronic, dealing with other employees and public relations, etc.). These skill gaps also hinder an employee's ability to progress their career, as many supervisor and management positions require these skills.

Solid Waste Management HR Issues

Recruitment

Challenges

Municipal solid waste management facilities have not faced the same challenges in hiring qualified people as water and wastewater facilities. Entry-level workers for these facilities have been particularly easy to find since the job requirements for these positions are not stringent and there are usually plenty of qualified applicants. However, a challenge that does exist in recruitment of higher level positions includes:

- Higher level technical positions are in higher demand, yet these skilled workers (intermediate and manager positions) often have private sector opportunities competing for them.

Strategies

Since certifications do not present the same challenge in solid waste management as they do for water and wastewater treatment, facilities have the luxury of recruiting for higher positions within their facility. Facilities that are large enough can allow entry-level workers to ease into more technical positions, and move up through the ranks. Strategies that respondents stated as being beneficial for tapping into the available labour pool include:

- Apprenticeships;
- On-site practicums;
- 'Ride-along's;
- Recruitment outside Canada. However, this practice is complex as Immigration Canada does not consider jobs in the solid waste industry "critical".

Retention

Part of the reason that respondents reported few challenges recruiting qualified staff was due to strong retention levels in their solid waste facilities. Since many facilities will fill higher positions by training entry-level workers, when they suffer employee losses it is easy to promote someone from within. This works well because they generally have few problems filling the entry-level positions.

Strategies

While solid waste facilities do not list employee retention as a challenge, many still employ strategies to keep workers engaged and happy. Some of those strategies include:

- **Rotating job duties.** This has been proven to reduce the impact of some of the more monotonous duties associated with solid waste management facilities. It also can prevent workers from becoming stagnant in the duties they perform, and allows fresh ideas from multiple people performing the same job on a rotating basis;
- **Investing in employees.** Facilities that invest in their workers through training and professional development, wellness programs, etc., report that the improved work environment is a key component of both their worker recruitment and retention.

Both of these strategies have proven useful for municipalities when developing a succession plan, as it involves sharing knowledge that is largely experience based, increases soft skills, and improves employee loyalty.

Career Paths

Facility managers and human resource personnel reported mixed views on career paths in the solid waste industry. In some facilities with larger workforces, workers can progress from entry-level positions to more technical or even supervisor or management positions. Smaller facilities with fewer advancement opportunities find that many workers seem content where they are, and do not want to retrain or upgrade skills in order to sell themselves for higher positions within the municipality.

Training

Training and professional development was not a challenge to many participating municipalities, although a few common points arose during the conversations. These include:

- Small municipalities typically are not able to send workers to an area outside of a reasonable daily commute due to lack of funds;
- Lack of casual staff to support the facility when full time workers are away;
- Online training is not an adequate replacement for hands-on training and many workers experience "burn out" from online training due to lack of engagement. Distance training courses also fail to offer any networking opportunities, which many respondents feel is the most important aspect of training.

Skills in Short Supply

The skill gaps that exist in the solid waste management labour force are similar to those that exist in the water/wastewater labour force. Many municipalities reported skills gaps that include:

- Communication and soft skills;
- Administrative and computer skills;
- Critical technical skills were stated in some cases – an indication of loose entry-level job requirements and a lack of essential certifications.

As is the case with water/wastewater practitioners, much of solid waste management training goes to technical skills that are used on the job, leaving many of the non-technical skills lacking.

A close-up photograph of a dark, textured pipe or pipe joint. A thick, clear stream of water is falling from the bottom of the pipe, creating a turbulent, aerated column of water. The background is a clear, bright blue sky with a few wispy clouds. The lighting is bright, highlighting the texture of the pipe and the clarity of the water.

Conclusions

As this report demonstrates, municipalities are currently facing challenges that will impose greater implications to the water, wastewater, and solid waste facilities in the coming months and years. This report underlines current issues and challenges and, in some cases, the strategies currently being employed by municipalities to address these concerns.

Since the areas of water and wastewater treatment and solid waste management are of critical importance to human health and the environment, municipalities need to ensure that these facilities are appropriately staffed with skilled and engaged workers. With the expected retirements of many senior personnel, municipalities will have to work actively on succession planning and recruitment strategies to ensure that the experienced-based knowledge is not lost.

Finally, many of the issues need to be solved at a higher level. The lack of nationally recognized credentials greatly limits the mobility of qualified practitioners between provinces, especially relating to water and wastewater treatment. Both industries also could benefit from enhanced "branding" of industry occupations to adjust perceptions about these vital career occupations.

Appendix A: Methodology

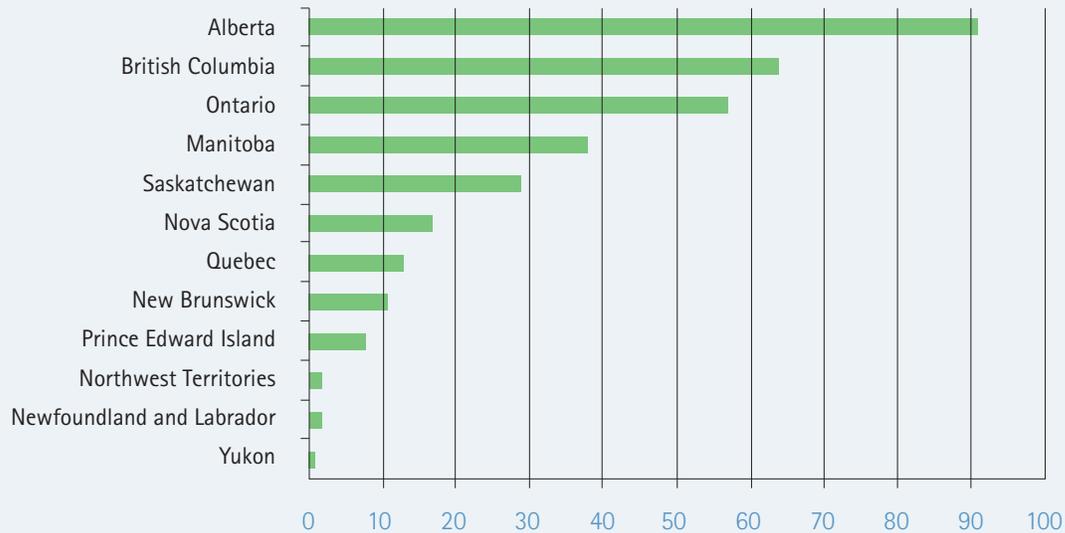
The Municipal Water & Waste Management Labour Market Study used three main research tools to gather data: a national working group, a quantitative survey that utilized both phone and online methodologies, and a series of focus groups both before and after the quantitative survey.

The project began with an initial consultation with the National Working Group (NWG), which was made up of representatives from a variety of municipal employers. NWG members provided a preliminary list of issues and topics that they felt the industry would want answered. This initial consultation combined with secondary research done by ECO Canada, were used as a starting point for the survey design and focus group guide. The NWG was engaged to provide feedback on methodologies used and results after the study was complete.

The qualitative data was collected using two research methods: a series of five online focus groups and personal depth interviews. The first series of focus groups and depth interviews were conducted in March to validate survey content and provide insight on flow and ease of completion of the survey. The second series of focus groups and depth interviews were conducted in October to probe critical human resource issues that could not be covered in the survey.

ECO Canada retained Justason Market Intelligence (JIM) to design, recruit, moderate, and report on the focus group findings. All focus groups were moderated by Cam Davis of JMI. Standard online focus group protocols were followed; participants were notified that the sessions were being recorded and they would not be identified in the report. The depth interviews were conducted by an experienced interviewer in an informal fashion and were not recorded.

Municipalities Surveyed



To gather the quantitative data, online and telephone surveys were conducted among municipal water, wastewater and solid waste facilities in Canada. The surveys were designed by ECO Canada, Justason Market Intelligence, and R.A. Malatest and Associates. The online phase of field was conducted from June 15 through October 15, 2009. Telephone field was conducted from October 16 through November 13, 2009.

The sample used was the Federation of Canadian Municipalities membership (1718) which represents over 90% of the Canadian population. A total of 333 municipalities and 414 facilities participated in the study. Below is a distribution of participating municipalities.

The 414 completed surveys are broken down as follows:

- 132 Solid Waste surveys
- 282 Water and Wastewater surveys

The results of the NWG meetings, depth interviews, focus groups, and phone and online survey were compiled, analyzed, and presented in this report.

Note on Weighting

The data presented in this report is unweighted. Weighting was considered and ultimately rejected in the absence of census figures that would allow us to project the results to represent the water, wastewater and solid waste industry.

Appendix B: Glossary of Key Terms

Water/Wastewater Facilities – This category includes facilities that are responsible for water treatment, water distribution, wastewater collection, and wastewater treatment.

Solid Waste Management Facilities – This category includes landfills, recycling facilities, incineration facilities, hazardous waste facilities, and composting facilities.

Appendix C: Survey Questionnaire

**This copy of the survey was for water/wastewater facilities. The survey for solid waste management was identical except for facility classifications and employment titles.*

Water and Wastewater Management Survey

Hello and thank you in advance for participating in the ECO Canada Water, Wastewater and Solid Waste Management survey. The survey will close on September 4, 2009.

For this survey you will likely require your employee records.

Through the Municipal Water and Waste Management Labour Market Information Project, ECO Canada and the Federation of Canadian Municipalities are launching a Canada-wide study to investigate labour market issues and trends relating to municipal water, wastewater, and solid waste management facilities.

On this first page you will be asked some questions for verification purposes. This survey should take no more than 15 minutes if you have the information on hand. Please take the time to fill out this survey as your feedback is extremely important to ECO Canada and the Federation of Canadian Municipalities. The results of this survey will be available to download from the ECO Canada website in January 2010.

Please note that the survey will save your responses after you go to the next page. You can resume filling out the survey at a later date by using the same link.

This survey is being administered by an independent research firm, Justason Market Intelligence (JMI). If you have any questions about how your information will be handled, contact Geoff Bird at 1-866-638-1121.

Keep in mind that all responses are submitted in confidence and are treated accordingly.

What is your name and work email address?

Please use the blank space to write your answers.

Name:

Email address:

For what municipality or regional district do you work for?

Please use the blank space to write your answers.

Municipality

Region

In what province or territory is your municipality located?

Please pick one of the answers below.

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland and Labrador
- Northwest Territories
- Nova Scotia
- Nunavut (Territory)
- Ontario
- Prince Edward Island
- Quebec
- Saskatchewan
- Yukon (Territory)

Is this facility located in an aboriginal community?

Please pick one of the answers below.

- Yes
- No

Is this facility...

Please pick one of the answers below or add your own.

- Part of a regional system (host facility)
- Part of a regional system (satellite facility)
- A municipal facility
- Other (Specify)

Which of the following best describes your profession?

Please pick one of the answers below or add your own.

- Human Resources
- Facility Manager / Supervisor
- Other (Specify)

This section of the survey covers your water or wastewater facility's full-time employee base. Please include all full-time employees of your municipality that work in the facility (even if their facility duties are part-time).

For the following section, please refer to this facility's employee records. We would like you to help us randomly sample this facility's employee population. If this facility has:

- Fewer than 30 workers, please randomly select 5 workers and add their information to the table below.
- 31 to 69 workers, please randomly select 7 workers and add their information to the table below.
- 70 or more workers, please randomly select 10 workers and add their information to the table below.

Note that you are not required to include the employee's initials in this table if it is confidential information.

Name (first and last initial)	Title	Gender	Age	Years of Service – Current Position	Years of Services – Facility	Annual Salary

Currently, how many unfilled full-time positions are there in this facility at each of these levels?

Please use the blank space to write your answers.

- Facility Manager / Manager
- Facility / Operations / Laboratory Supervisors / Lead Hand
- Senior or Experienced Operators / Senior Lab Technicians
- Intermediate Operators / Operators in Training / Lab Technicians
- Operators certified one level higher than the facility
- Total

In 2008, how many new people were hired to work full-time at this facility in the following positions?

Please use the blank space to write your answers.

- Facility Manager / Manager
- Facility / Operations / Laboratory Supervisors / Lead Hand
- Senior or Experienced Operators / Senior Lab Technicians
- Intermediate Operators / Operators in Training / Lab Technicians
- Operators certified one level higher than the facility
- Total

This section of the survey covers the future labour requirements of this facility and worker retention. Please include all full-time employees of your municipality that work in the facility (even if their facility duties are part-time).

Based on your experience and any changes you can anticipate at this facility, how many positions do you expect to open within the next year in the following job levels?

Please use the blank space to write your answers.

Facility Manager / Manager
Facility / Operations / Laboratory Supervisors / Lead Hand
Senior or Experienced Operators / Senior Lab Technicians
Intermediate Operators / Operators in Training / Lab Technicians
Operators certified one level higher than the facility
Facility labourers
Total

How much of a challenge was it to hire for the following position levels over the past two years?

Please use the blank space to write your answers.

Very difficult
Somewhat difficult
Neither
Somewhat easy
Very easy
Not applicable

Facility Managers / Managers
Supervisors – Operators
Supervisors – Lab
Technicians
Senior or Experienced
Operators
Intermediate Operators
Operators in Training
Lab Technicians
Labourers

Do you anticipate challenges filling any of the following positions over the next two years (assuming there are openings in this facility)?

Please mark the corresponding circle - only one per line.

- Very difficult
- Somewhat difficult
- Neither
- Somewhat easy
- Very easy
- Not applicable

- Facility Managers / Managers
- Supervisors – Operators
- Supervisors – Lab
- Technicians
- Senior or Experienced
- Operators
- Intermediate Operators
- Operators in Training
- Lab Technicians
- Labourers

In which of the following employment levels do you have the greatest challenge retaining workers in this facility?

Please check all that apply and/or add your own variant.

- Facility Managers / Managers
- Supervisors – Operators
- Supervisors – Lab Technicians
- Senior or Experienced Operators
- Intermediate Operators
- Operators in Training
- Lab Technicians
- None of the above
- Other (Specify)

This section of the survey covers this facility's turnover. Please refer to all full-time employees of your municipality that work in the facility (even if their facility duties are part-time).

What was your overall turnover rate (%) for this facility in...

Please use the blank space to write your answers.

- 2007 (%)
- 2008 (%)

This section of the survey covers this facility's recruitment resources. Please include all fulltime employees of your municipality that work in the facility (even if their facility duties are part-time).

From which labour pool(s) are new management-level workers in this facility being recruited?

Please check all that apply and/or add your own variant.

- High school
- Post-secondary institutions
- Private sector
- Within this facility
- Within your municipality
- Not applicable
- Other (Please Specify)

From which labour pool(s) are new supervisor-level workers (Facility / Operations / Laboratory) in this facility being recruited?

Please check all that apply and/or add your own variant.

- High school
- Post-secondary institutions
- Private sector
- Within this facility
- Within your municipality
- Not applicable
- Other (Please Specify)

From which labour pool(s) are the senior or experience operators (non-supervisor level) in this facility being recruited?

Please check all that apply and/or add your own variant.

- High school
- Post-secondary institutions
- Private sector
- Within this facility
- Within your municipality
- Not applicable
- Other (Please Specify)

From which labour pool(s) are new lab technicians in this facility being recruited?

Please check all that apply and/or add your own variant.

- High school
- Post-secondary institutions
- Private sector
- Within this facility
- Within your municipality
- Not applicable
- Other (Please Specify)

What are the minimum credentials required for the following positions:

Please fill in the answers in the table below (mark appropriate circles and squares and fill in the blank spaces).

- Minimum experience
- Minimum education
- Other

- Facility Manager / Manager
- Facility / Department Supervisor
- Senior Operator
- Operator
- Lab Technician

This section covers this facility's for training workers and the impact of municipal, provincial and federal regulations.

What is your 2009 annual budget, excluding salaries, set aside to train new workers in this facility (workers employed for two years or less)?

Please use the blank space to write your answers.

Budget (\$):

Estimate the proportion (as a percentage) of the annual budget set aside to train new workers allocated to the following areas (areas that do not use this portion of the training budget may be left blank):

Please use the blank space to write your answers.

- Facility Manager / Manager
- Facility / Operations / Laboratory Supervisors / Lead Hand
- Senior or Experienced Operators / Senior Lab Technicians
- Intermediate Operators / Operators in Training / Lab Technicians
- Operators certified one level higher than the facility

Have any new municipal, provincial or federal regulations introduced in the past three years impacted how this facility operates? If yes, please list these regulations, whether the regulation is municipal, provincial or federal, and their impact (including new positions created).

Please fill in the answers in the table below (mark appropriate circles and squares and fill in the blank spaces).

Regulation	Municipal / Provincial / Federal regulation	New position(s) created	Other impact
Regulation 1			
Regulation 2			
Regulation 3			
Regulation 4			
Regulation 5			
Regulation 6			
Regulation 7			
Regulation 8			

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For technical support, please contact us at 1-866-638-1121. You can also contact us at questions@justasonmi.com.

If you have any other comments you would like to add regarding any of these subjects or on **Water and Wastewater Management** in general, please enter them here.

Please write your answer in the space below.

Appendix D: Focus Group Discussion Guide

With the current surge of public funds into the area of municipal infrastructure investment, there is a growing need for understanding the issues that go beyond building these facilities and structures. **A large portion of the public spending in the near future will come in the form of building and upgrading water, wastewater, and solid waste management facilities.** ECO Canada's Municipal Water & Waste Management Labour Market Information project aims to examine the practitioners working in these facilities to understand the:

- Current demographics of the workforce
- Current supply and future demand of practitioners for these facilities
- Critical HR issues
- Characteristics of employer demand

Questions

1. Overall, what do you feel are the greatest challenges facing the municipal water and wastewater industry related to recruiting new workers? What about recruitment opportunities? (PROBE FOR EXPERIENCE WITHIN THEIR FACILITY AND SPECIFIC JOB CATEGORIES)
2. Overall, what do you feel are the greatest challenges and threats facing the municipal water and wastewater industry related to retaining its current workforce? (PROBE FOR EXPERIENCE WITHIN THEIR FACILITY AND SPECIFIC JOB CATEGORIES)
3. What strategies have you employed when hiring workers in your facility? Which have been the most successful/efficient?
 - a. How does your strategy change when working with workers in different job categories?
4. What strategies do you currently employ at your facility to maximize worker retention?
 - a. Do you use different strategies for the different job categories in your facility?
5. What would you consider a typical career path for a worker who starts as a labourer or operator-in-training?
 - a. Besides personal preference, what factors influence a workers' career path within this industry?
6. What skills do you feel are underrepresented within the municipal water and wastewater industry?
 - a. Is there a particular job category that is under threat?
 - b. What do you feel are the cause of these skill gaps (insufficient training etc.)? How would you like to see them addressed?
7. What are the greatest challenges you face training new workers?
8. What are the greatest challenges you face providing ongoing professional development for workers?
9. What are the greatest challenges running a municipal water and wastewater facility (as opposed to private facilities)?
10. As an employer, what do you feel are the greatest personal or professional benefits a municipal water and wastewater facilities offers (as opposed to private facilities)?

This information will inform ongoing infrastructure investment by ensuring that the labour market conditions in relevant areas are understood and addressed. This project will continue ECO Canada's work and mandate toward creating human resources strategies based on accurate and updated data.

The focus of this session will be on critical HR issues and strategies.



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