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WASTEWATER NEWS
ONTARIO ON-SITE WASTEWATER ASSOCIATION NEWSLETTER

InSide

- **Assuring Confidence in the Ontario Onsite Wastewater Industry**
- **Frequently Asked Questions** — About Sewage Systems and the Ontario Building Code

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OnSite is published quarterly by Ontario On-Site Wastewater Association. To submit an article, contact Terry K. Davidson at (613) 692-0160 ext. 107 To place an advertisement, contact the LandOwner Resource Centre at (613) 692-2390

Technical Review
Terry K. Davidson

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Second Annual Conference: The Gospel of Onsite

by Doug Joy

The 2nd Annual Ontario Onsite Wastewater Conference and Exhibition was successfully held March 25th – 28th at the Delta Meadowvale Hotel and Conference Centre in Mississauga. Over 200 attendees heard presentations from speakers from as far away as California and British Columbia on topics ranging from artificial wetlands to failed sand filters and ground penetrating radar to remote monitoring systems. Judging from the number of attendees and the response to the exit questionnaires, the conference was an overwhelming success.

This years first keynote speaker was Dr. George Tchobanoglous from the University of California at Davis. His talk covered a range of experiences from his extensive career but the message was clear, that is, we should think of onsite wastewater treatment and reuse as "1st Class" and think of conventional sewer systems as "2nd Class." Or to put it more directly based on his observations in California, "sewer lines are leaking everywhere and uniformly contaminating the groundwater." In addition to this encouraging talk, Dr. Ted Louden, past president of NOWRA also brought encouraging news of the advances in acceptance of onsite treatment in the US and helped us "see the light" while preaching on the "Gospel of onsite."

The second day was started off with two talks from representatives of the Provincial Government. Although the minister of Municipal Affairs and Housing, Chris Hodgon, was not able to attend, his parliamentary assistant, Morley Kells, came to let us know what was happening with the building code and other activities by the Ministry that may affect our industry. Elizabeth Witmer, Minister of the Environment, outlined the provincial government's Operation Clean Water program that aims to give Ontarians the safest, cleanest drinking water possible. We were all invited to provide input to the ministry as they conduct their review of the guidelines for land application of biosolids. She finished by reiterating the provincial government's three fundamental pillars, one of which is a "clean, healthy environment."

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Members of the Biosolids Discussion Panel

Back Row (from left to right): Mark Janiec, Michael Payne, Ted Loudon, Jim Aitkin
Front Row: Doug Joy, Ken Durham

Letter to the Editor

We wish to comment on David Cooke's letter which appeared in your Issue 1, January 2001.

Mr. Cooke's opening and closing statements tend to capitalize on the fear-mongering that is associated with the name "Walkerton" and in his haste to put "installers on notice" his remarks were unwisely chosen.

Mr. Cooke is quick to assume that "the present state of mind of most installers is installing systems to the minimum, both through the code and economically." He insinuates that this is not acceptable. Where did he take HIS sewage system course? Our information says among other things that the Ontario Building Code is a means of providing for a minimum level of public safety through the application of uniform standards. Under the OBC, there are no policies or guidelines, only the provision of minimum standards. There is a margin of error that has been factored into each formula that is set out in the OBC to assist with the design of all systems. Mr. Cooke's present position as Coordinator of Sewage System Programs dictates that he is to be in the business of enforcing the OBC that is presently legislated. Sadly enough, like many of his peers, his personal agenda over-rides that of his paid position.

We have installed sanitary sewage systems for 30 years and the OBC 5-day course which we took was invaluable in teaching us how to apply it in our industry. As installers, we need the enforcing agents to work with us in this field because it is their job to tell us where proposed system designs are in non-compliance under the OBC.

You will be pleased to know that many installers DO communicate the value and technical advantages of on-site sewage treatment systems to customers and we are always anxious to learn about new technology. Our company has been installing alternative units when requested for the past three years (we have one at our own residence). The units are presently about twice the price of a conventional system. People who profess to be environmentally concerned do a little back-tracking when a price is quoted. Our duty certainly is to provide the best system possible to property owners but until municipalities become more familiar with alternative treatment units and until the units become more affordable for everyone, it is the conventional system that will likely be chosen.

We are members of Ontario Association of Sewage Industry Services (OASIS). We would invite Mr. Cooke to attend our annual conference which will be held in November. For more information, regulators can contact the Executive Director, Don Kelloway at 705.778.1265.

Yours truly,
Ray Windebank, President
Ray Windebank Excavating Ltd.

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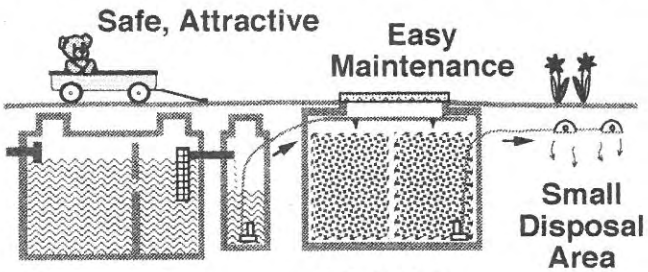

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Assuring Confidence in the Ontario On-Site Wastewater Industry

Chris Kinsley and Doug Joy, ORWC

The on-site industry has changed dramatically over the past few years. New technologies have entered the market which permit much greater flexibility in the design of systems, particularly for sites with difficult soils. Regulations are being revisited across North America, with professional certification programs being initiated in many jurisdictions. With these developments, on-site treatment can provide a permanent and sustainable solution to wastewater management. The challenge is to create a system in which the public has complete confidence and which protects both public health and our water resources. The USEPA and many jurisdictions have recognized on-site systems as an essential component to the permanent management of sewage effluents. In order to instill confidence in the on-site industry, some challenges must be overcome. The National Onsite Wastewater Recycling Association (NOWRA) has developed a model framework for unsewered wastewater infrastructure in order to help guide the development of the on-site industry. The NOWRA framework identifies key elements to establishing a sustainable and credible on-site industry. This article compares key elements of the model framework to the situation in Ontario and in other jurisdictions.

Four elements of the framework will be discussed:

- Performance requirements that protect human health and the environment.
- System management to maintain performance.
- Education and training for all practitioners in the on-site profession along with system planners and owners.
- Certification and/or licensing for all practitioners to maintain standards of competence and conduct.

(Walsh, J., Otis, R.J. and T.L Louden, 2001)

1. Performance Requirements

A performance based code would define acceptable effluent standards based upon the risk to public health or water contamination. At present in Ontario, as in almost all other North American jurisdictions, a prescriptive approach is used whereby design criteria are stipulated without considering risk. The *Ontario Building Code* (OBC) sets out prescriptive design standards for conventional septic systems. These criteria have been developed over time to ensure that there is no hydraulic failure of the system, not necessarily to protect groundwater from contamination (Walsh, J., Otis, R.J. and T.L Louden, 2001). The OBC does however use a performance based approach with treatment units. The code defines the criteria for secondary and tertiary effluents for BOD5, CBOD5 and TSS. This does not, however, take into account the risks posed at individual sites.

A complete performance based system would consider the risk to public health or water contamination. For instance a subdivision on sandy soils with a high water table should require a high standard of treatment (and possibly even disinfection), while an isolated cabin, far from neighbours or water courses could require a lower standard of treatment. In another example, a performance based system could require nutrient removal on waterfront properties if eutrophication is considered to be a serious risk. Maine is perhaps the only jurisdiction where the concept of risk assessment is utilized in determining appropriate treatment levels. In the Maine code, difficult sites are evaluated according to a point scheme taking into consideration: soil type, distance to water, depth to watertable, property size, position in landscape, etc. The results of this evaluation determine what type of technology is suitable for the site or even if the site can be developed at all (Hoxie, *et al.*, 1987).

In order to protect water quality, it will be necessary to regulate contaminant loading from all on-site systems within a watershed. A performance based approach will provide regulators with the tools necessary to protect our ground and surface water resources.

2. System Management

Once a system is installed, like any other technology, it must be maintained. In Ontario there are no requirements for regular maintenance of conventional septic systems. There is, however, a requirement for there to be a management contract for all treatment units installed. In many U.S. jurisdictions there are requirements for septic tank pump outs at regular intervals and for maintenance inspections of pumps and aeration units.

A governmental regulatory agency must have responsibility for the monitoring of all on-site systems. In Ontario, there is

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no province-wide inspection program for on-site systems other than what is included in a maintenance contract for treatment units. Some jurisdictions in the U.S. require an inspection at the time of property transfer, while others carry out annual or bi-annual inspections (B. Johnson *et al.*, 2001; Mancl, K., and Patterson, S. 2001). In order to manage on-site systems, it is of paramount importance that all systems be regularly inspected and maintained.

3. Education and Training

The model framework identifies training as a key element for all practitioners within the on-site field as well as for planners and owners. The Ontario Ministry of Municipal Affairs and Housing (MMAH) developed a training program covering material from the building code relating to septic systems and prepares students for writing the certification exam. The Ontario Rural Wastewater Centre (ORWC) offers a series of short courses for on-site professionals covering everything from soil identification and site inspection to alternative systems. There are also courses for homeowners and real estate professionals. The ORWC uses working demonstrations of on-site technologies in its demonstration buildings at the University of Guelph, Collège d'Alfred and at the Baxter Conservation Area (south of Ottawa). There are now more than two dozen similar demonstration centres in the US as well as a centre in British Columbia.

4. Licensing and Certification

Licensing and certification of all practitioners is essential to assure high standards of competence and conduct. Continuing education is a central tenet of the model framework for licensing and certification programs. The licenses should be limited in term but renewable following documentation of minimum continuing education requirements. Also, they must be revocable if the holder is found to be negligent or fraudulent. (Walsh, J., Otis, R.J., and Loudon, T. 2001)

The Ontario Ministry of Municipal Affairs and Housing is responsible for the certification program in Ontario. In order to install or inspect on-site systems, a certification exam covering relevant sections of the Building Code must be passed. At present, there are no requirements in Ontario for continuing education. The procedure for recertification has not yet been elaborated.

There are similar certification requirements in most provinces. In Saskatchewan, a person has to be considered as a qualified person to install septic systems. Previous experience or training as a plumber would suffice. British Columbia has the most comprehensive certification program in Canada. The program is a voluntary program; however, regulators may insist that installers be certified in order to be considered qualified personnel under the code. There are certification programs for: Soils Analyst, Designer, Installer, Maintenance Provider and Regulator. Each program involves a certain number of two-day courses offered at the BC On-Site Training Centre.

In 1996, Florida instigated a Master Septic Tank Contractor Registration Program. The program involves 30 hours of advanced education covering basic concepts, site evaluation, soil and water table evaluation and system design and dosing. A comprehensive final examination is administered upon completion of the training course. The program enables Master Contractors to assist with continuing education courses, inspect and close system repairs, perform soil evaluations and design systems. Master contractors can be expected to effectively educate consumers and promote the long-term acceptance of on-site systems. (Barranco, E.J. and Briggs, G.R., 1998)

In many jurisdictions across the U.S. continuing education is a requirement to maintain a licence. In Prince Edward Island registered installers must attend a one-day seminar every two years or have their licences revoked. Continuing education requirements are essential for the Ontario on-site industry to develop and maintain a high level of competency.

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Repairing of Existing Sewage Systems

Q ▸ An existing sewage system to which Part 11 of the *Ontario Building Code* (Code) applies and which is not in compliance with the current requirements of the Code needs to be repaired. Must the repair comply with the current requirements of the Code or may the repair maintain the existing performance level of the sewage system?

A ▸ Where an existing building system is materially altered or repaired, the performance level of the building after the material alteration or repair shall be at least equal to the performance level of the building prior to the material alteration or repair.

In cases where a sewage system is repaired, Part 11 of the Code permits such repair be carried out even if the sewage system is not in compliance with the current Code requirements related to the design and construction of sewage systems. Replacement of defective parts such as broken pipes, a damaged header or a distribution box, etc. may be considered as a "repair." The performance level of the sewage system after the repair must exceed or at least match the performance level of the sewage system before the repair. While the design and construction criteria of the current Code may not apply to the sewage system that is under repair, the operation and maintenance requirements of the current Code would apply to the sewage system after the repair is complete. In other words, the Code does not permit the repair of a sewage system to maintain the original performance level where, after the repair, the operation of the sewage system would not meet the criteria stipulated in Section 8.9. of the Code.

Replacement of Major Component of an Existing Sewage System

Q ▸ Can the replacement of a major component of a sewage system such as the leaching bed or the septic tank be viewed as a "repair" which need only maintain the existing performance level, or should this work be viewed as a "replacement" which must comply with the current requirements of the Code?

A ▸ The determination of whether proposed construction should be considered as a "repair" or a "replacement" will depend on the specific facts of each case. Relevant factors in making this determination might include: (1) the existing condition of the sewage system and whether or not it is considered "unsafe" within the meaning of s.15(2.1) of the *Building Code Act*, 1992 (BCA); and (2) the potential impact of the proposed construction on the health and safety of people and the environment if the sewage system was permitted to maintain its existing performance level.

It is the opinion of the Housing Development and Buildings Branch that the replacement of a major component of an existing sewage system may be viewed as a "repair" provided that: (1) the performance level of the sewage system after the repair is at least equal to the performance level of the sewage system prior to the repair; and (2) the repair of such system will not create an "unsafe" condition or permit an "unsafe" condition to continue.

In cases where the construction in respect to the sewage system will create an "unsafe" condition or permit an "unsafe" condition to continue, the construction cannot be carried out to match the existing performance level. Rather, the sewage system should be considered as "unsafe" and corrective measures necessary to render the system safe shall be determined by the CBO. This will generally result in the replacement of the sewage system to current requirements of the Code.

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The conference had an excellent array of exhibitors. Although mostly manufactures or distributors of products for the onsite industry, they also included consulting firms and government ministries. The exhibits were the conference highlight for a number of the attendees — many, many business cards were exchanged and contacts made at the various booths.

On display at the 2nd Annual Onsite Wastewater Conference and Exhibition

This year's conference also had a tour on the 25th. Although the day was a bit cold, the participants had the opportunity to see two unique installations of a Waterloo Biofilter and an Ecoflow system as well as visit the demonstration facilities of the Ontario Rural Wastewater Centre. After the conference, five workshops on topics including "Land Application of Biosolids and Septage" and "Inspection Troubleshooting and Remediation" were well attended. Make time for these next year!

Finally, this year's conference was co-sponsored by the Ontario Rural Wastewater Centre and the Ontario Onsite Wastewater Association — a joint venture we hope to continue into the future. On behalf of both organizations, I would like to thank the organizing committee for their excellent help in putting the conference together, the exhibitors for such interesting and informative displays, and finally the speakers for broadening our horizons on the applications for onsite wastewater treatment. If you have ideas for ways to improve the conference next year, let me know. Like the environment ministry, we are aiming for continuous improvement.

Ontario On-site Wastewater Association

The 2nd Annual Meeting of the Ontario Onsite Wastewater Association in Mississauga was held on March 26, 2001. Reports from each sub-committee were presented and a questions and answer period followed.

"Permanent Wastewater Servicing Through Onsite Treatment"

I presented a brief activity report of issues the Association has been dealing with. The Ministry of Municipal Affairs and Housing has set up a stakeholders group to discuss two items. The first item involves making it mandatory to require effluent filters be installed in all septic tanks servicing new onsite sewage systems. The second issue involves making it mandatory for all access lids to septic tanks and pump chambers be located not more than eight inches below finished grade.

If you have any questions, please contact:
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Conclusions

Changes to the regulation of on-site systems in Ontario have moved the Province in the direction that NOWRA is defining with its model framework. Performance requirements have, to a limited degree, been introduced for treatment units but remain to be defined for conventional systems.

Approvals are based upon a prescriptive code as opposed to an assessment of risk to public health or water quality. Management contracts are required for treatment units but there is no systematic monitoring or maintenance of all existing systems. The MMAH certification program is a good start to enhancing the professional image of the on-site industry; however, continuing education must be a requirement for all on-site professionals in order to continually improve the standard of competency within the industry. The question remains, should the motivation for continuing education come from the Ministry or from the On-site Industry?

Assuming Confidence — References

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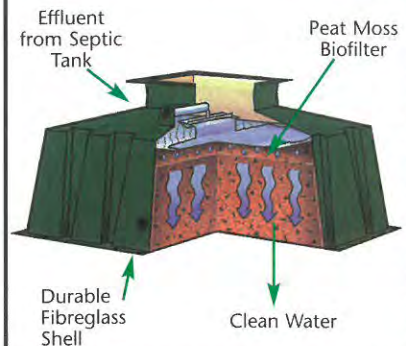

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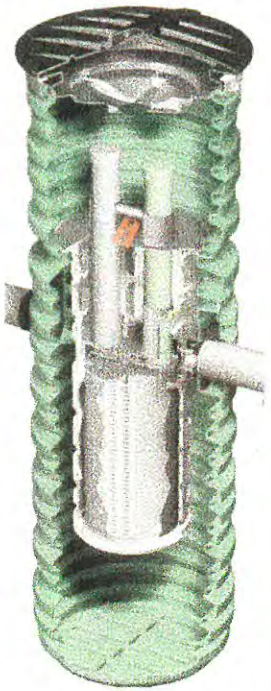

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