

# **PRESENTER'S GUIDE**



**Biosolids**  
**Naturally Sustainable**

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# Biosolids: Naturally Sustainable

## A Public Education Video

### INTRODUCTION

Welcome to the presenters guide for the educational/ informational video "Biosolids: Naturally Sustainable".

If you are not totally familiar with the sponsoring organization that developed the video, Water Environment Association of Ontario, (WEAO) please take a few moments to visit the organization's web site [www.weao.org](http://www.weao.org). You should also view the video several times before using it in any public presentation.

Keep in mind that the Water Environment Association of Ontario developed this video as a public education tool in response to concern related to the use of biosolids, and specifically related to their reuse on agricultural land. In many cases the public appears to have been reacting to incomplete or misleading information. It is important from the WEAO perspective, that the public has access to correct and complete information for them to understand and participate in resolution of issues that affect the environment. This video is an updated version of the first public education video "The Nature of Biosolids". In this video the focus is on the role that biosolids reuse plays in environmental sustainability.

### *Bridging the Knowledge Gap*

The WEAO Biosolids Committee recognizes that a gap in public knowledge can be detrimental to how municipalities plan and manage the recycling of biosolids.

This video provides the facts about biosolids, and focuses on the reasons for reusing these valuable nutrients as well as on the guidelines and the ongoing research that are in place to protect the public and the environment.



*Harryuurma, a farmer in South Western Ontario, appears in this video. He speaks about the way his yields have increased since adding biosolids to the land.*

Using interviews with government representatives, researchers and other professionals, the video content is designed to educate and inform those not involved in the biosolids field.

The video is primarily a public education tool for the use of municipalities, the principal generators of biosolids; and for municipal operations staff involved in regulatory approvals, biosolids processing, transporting and spreading biosolids on agricultural land.

The video may be used as:

- An education tool for the public at large, councilors and other politicians, interested stakeholders,
- An audio/visual aid for use at public meetings,
- An educational tool for staff,
- A tool for use in briefing the media.



The video may be also be used in any other situation to help inform and educate people about this topic. Once a person has viewed the video they will have a basic understanding of the following:

- How and from where biosolids are generated,
- How the WWT plant process works (a basic sketch of the process)
- Each person's role in generating biosolids and in protecting the quality of biosolids
- What biosolids generally contain, including contaminants of concern,
- What research has been done and is being done relative to biosolids and contaminants,
- The broad range of benefits related to biosolids reuse,
- They will see biosolids from the perspective of farmers, scientific researchers, Ontario Ministry of Agriculture, Food and Rural Affairs, Ministry of Environment, the Environmental Commissioner,
- What regulations are in place and who monitors biosolids practices,
- Environmental, sustainability and human health related considerations.

## An Educational Video Tool

As you prepare your presentation, please remember that the video is an education and information tool. It is not intended for use as a technical skills tool, nor does it focus on describing and detailing the more technical aspects of biosolids – such as complex processes in treatment plants, or hauling and spreading. It is designed to tell the average person more about some of the key issues and to present those issues from the perspective of the average person.

This video provides an overview to use in informing others about the overall issues concerning biosolids. It can be used as the basis for a comprehensive discussion in a public meeting or in many other settings.

However, this video is only a tool, it cannot be the entire presentation, and you will play a significant role in how the presentation is perceived. As the presenter you also play a significant role in the overall success of the outcome.

You need to consider carefully what you say, how you will position the video, how you will make your presentation relevant to the audience. A planned and prepared presentation will make your level of confidence increase. All of these things are part of the success of any presentation.

This guide is designed to assist you in putting all the elements together to create a positive and successful presentation. Before you begin preparing your presentation, take a few moments to read through the entire presenter's guide. It contains some important tips and techniques that will help you use this presentation material in a variety of situations.

To help you deliver the best possible presentation and to help you make your overall presentation a success you have a number of critical issues to consider before planning to use this video as an educational tool.



## Presenting – It’s More Than Turning on Your A/V Equipment

Your presentation is more than just turning on a video. You must at minimum prepare the audience with introductory remarks, field, even encourage questions and lead discussion after the video. To get the results you want you will need to:

- Review your topic knowledge, (especially local issues knowledge),
- Be totally familiar with the video watching it several times before planning your presentation,
- Plan your overall presentation, and
- Prepare to handle what may be intense or potentially controversial interactions.



Since the topic of biosolids may be unfamiliar to the audience, or they may come with some misconceptions or misunderstandings about biosolids, there is always a potential for tangents, emotional discussions and personal apprehension to reduce the effectiveness of any presentation. This guide will assist you in avoiding these hurdles or dealing with some common potential pitfalls you may encounter.

In addition, making presentations may not be something you do regularly and sometimes this reduces the confidence of a presenter. Preparing the support elements for your presentation and making use of some simple tips and techniques may help improve your presentation skills, and foster confidence and ease.

Before you take the video to a public presentation take a few minutes to work through this guide and plan for a successful presentation.

## PREPARING TO PRESENT

### PART ONE: PRELIMINARY STEPS

There are many reasons to use this video, and many possible settings in which it may be shown, as well as a wide range of audiences. It is important to consider all the logistics and audience information you have before planning and preparing your presentation. Taking these preliminary steps will help you develop a highly successful presentation.

#### 1) Consider Your Audience

You may be presenting the video to a large group of municipal staff, a small special interest group, a mixed audience of the general public, or to some other group or organization.

Think about the needs, concerns and interests of the audience. Tailor your remarks to meet the audience profile. For example, an audience of the general public will not be familiar with the jargon or technical terms of wastewater industry professionals. Plan to keep these out of your presentation.

As well, ensure that you know what motivation the audience has for attending the presentation and reflect that interest in the overall planning of your tone and content. For example if the group is made up largely of farmers or agricultural specialists, you will need to tailor your remarks to reflect their focus and their likely concerns.

#### 2) Logistics

*Many presentations go off track because the presenter failed to consider the physical facility and basic logistics.*

##### a) The Facility

Surroundings and physical resources can be an influencing factor that contributes to the success or the failure of a presentation. If you are not familiar with the facility consider finding out more before you arrive. Is the space large enough for your audience without being too large? Could there be concerns about noise from other groups in the facility? This is frequently a serious concern in community centres and arenas.

## **b) Consider the Audio Visual**

You need to determine what AV tools are available, and or what tools are most appropriate for both the site and the size of your audience.

If what is available is a TV and a DVD player or blue-ray player, will the screen be large enough for the whole group to see? Can it be located to allow the group to see and hear the video easily?

You may be using a laptop and a projector to show this video; in that case you need to ensure that a screen is available and that it can be positioned properly in the space and that your laptop will play the video.

If you are using slides to introduce the presentation and provide other information, consider linking the video to the slides so it is a smooth transition from PowerPoint to video.

## **c) Physical Comfort**

Seating and washrooms must be adequate. Lighting needs to be in your control – such as blinds for daytime sessions or control of overhead lighting. It is surprising how much the comfort of the facility has to do with attitude and mood of an audience.

If you are planning to use additional display or other items of interest, be sure that the room can easily accommodate this material.



## **d) Group Size**

Group size is an important factor to consider. A very large group (more than 15 – 20) will mean more questions and more time required for dialogue. If you expect hundreds of people then the design of your overall presentation would be quite different than if you were expecting a couple of dozen people. Consider the value of offering an opportunity to ask questions and have dialogue. It is often better to reduce the presentation time in favour of offering more time for discussion.



### e) Available Time

Available time is also a planning factor. Your presentation may be scheduled as a half-hour time slot in a larger overall venue or it may be the focus of a 1-hour or longer session. Confirm the time you have available and plan your presentation accordingly.

Nothing turns an audience off quicker than a presenter who speaks past their allotted time.

Respect the time people have given you and ensure that you take into consideration the reasonable time you can expect the attention of your audience.

Remember that the video itself runs for almost 18 minutes – which is a long time to have an audience sitting quietly in the dark. See “keeping your audience engaged” for some useful tips to help combat this phenomenon.



## PART TWO: CONTENT PLANNING

### Step One: Developing Goals & Objectives

The first and most important step in planning your presentation content and style is setting the goals and objectives for the presentation.

There are a number of ways you can do this; however, the easiest way is to simply put your ideas on paper or on your computer screen. If you are planning a group presentation you may want to brainstorm these ideas with your fellow presenters.

To help identify possible goals and objectives you will need to consider:

- The overall desired long term outcomes of the presentation,
- The short term outcomes or expectations you have for the presentation, and
- What action (if any) you want to encourage the audience to take after the presentation.

Keep in mind that *goals* usually represent the larger scope of outcomes and **objectives** are often the elements that make up the overall goal. Once you have outlined your goals and objectives for the presentation, you will be better able to select an appropriate approach, create an introduction to the presentation and design the overall content required to meet your goals.

In addition, goals and objectives allow you to identify any information gaps you may have. This will allow you to select additional support tools, content, or other elements you require beyond the video.

## Step Two: Selecting the Content

1. Review the list of goals and objectives you have developed for the presentation.
2. Determine what your audience will need to know or understand in order to ensure that the goal (s) can be met.
3. Now review the video, checking off the content elements that will help meet the goals and objectives you have set. Determine if the content of the video is sufficient to meet the goals, or if additional information is required.
4. Gather any additional materials you may require for the presentation.
5. Check off any topic areas within the video or in the overall presentation for which you feel you may need more information.

You may wish to plan a structure for encouraging questions and dialogue. When you've completed this planning, you should have a full time-plan which indicates exactly how much time you will use to present to your audience.

### ***Break it Up!***

*Keep in mind that more than 15 – 20 minutes in the dark can be too long to keep an audience's attention! If your overall presentation uses slides, in addition to the video, be sure to break up the “in the dark” portions of the session. Ensure that you have lights up and “brain active” interludes between the video and any slides you are showing. To keep people engaged, plan for interactions with the audience, prepare a simple demonstration (such as showing a sample of pelletized material or whatever is appropriate) to break up the “dark” portions of the presentation.*

*An action activity or a discussion can help keep people feeling interested and involved during a longer presentation.*

## Step Three: Matching Introduction & Tone to the Audience

Since every audience is slightly different, every presentation may require a different emphasis, introductory remarks, background information and positioning for the issues.

In planning for your presentation you need to:

☑ **Who Are You Talking To?** Knowing your audience and considering the profile, interests and concerns of each audience is critical to success. Phrase your opening remarks to match those concerns. For example, if your audience is an environmentally concerned group your opening needs to acknowledge that concern and reflect how your presentation and the video will focus on dealing with their concern in a positive way. If you are speaking to a rural group composed of farmers, your opening remarks and your presentation content should be different than if you are speaking to an environmental interest group.

☑ **Anticipate!** Assemble a list of anticipated concerns or objections related to the audience through some research and some specific thinking; - for example reference the local papers, council meeting minutes, or other sources of information. Be prepared to deal with issues of local concern as well as more national issues. **Do your homework.**

☑ **Think About The Audience Viewpoints.** Remember that your audience may have recently read or heard about an issue related in some way to this topic and whether or not that issue is relevant, the information may still be top of mind for the audience.

In fact, sometimes people hear something and are not certain of the meaning of the comment or do not clearly understand the information.

Remember that they have a different background and expertise from yours and are not likely experts in biosolids or even in science. Some of the ideas they have or their opinions have been developed by what they have heard or read in the media.

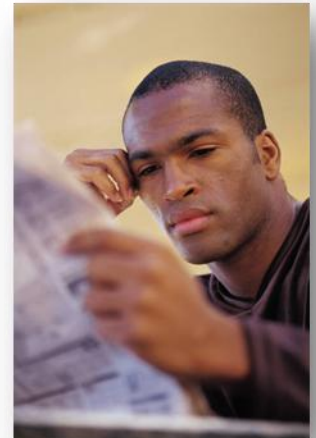
Acknowledge to yourself that a fact is indeed a fact if you sincerely think it is. Be sure to treat the concerns of the audience with respect – even if their concerns do not appear to be based on scientific fact, they are legitimate to them.



*Knowing your audience is critical to success.*

- ☑ **Identify any information gaps before you present.** For example, if the likely concern is the hazards of a specific type of contaminant the audience feels may be found in biosolids, you would need to gather basic information and current facts about that material or substance. In some cases it may be really important to bring on a recognized expert to join you in your presentation.

The more information and comfort with that information you have the more confident you will feel and this shows. That sense of confidence will help increase your credibility. However, be cautious about how you deal with these issues and remember that it is good to be aware of the issues, but it is not necessary to deal with these issues as an expert. When you are not sure it is always best to say that you are not sure and that you will get back to them with an answer at a later date, or defer to the expert advisor you have brought into the presentation team.



*Remember that some audience members will have opinions about biosolids that have been developed largely by the media.*

- ☑ **Consider follow up.** Reflect on the nature of the audience, the action you want them to take, and the goals and objectives of your presentation and determine if a follow up such as a handout may be required. For example, if the audience is municipal staff might they need a print piece to help them remember the key points when presenting information to their council members.
- ☑ **Make it positive.** Select your words and remarks, the tone and the content carefully to help ensure that the overall experience is as positive as possible for both the presenter and the audience.
- ☑ **Clear up your language!** Be clear, remember to avoid jargon, the use of acronyms, highly technical words and phrases as these obscure meaning and confuse an audience not familiar with these words and terms. Similarly remember that even if your audience is made up of waste water treatment staff they may not be as familiar with biosolids information as you are and avoiding jargon and complex technical terms is likely to increase comprehension and comfort with the presentation content.

## ***IT CAN BE A CONTROVERSIAL TOPIC***

Public opinion and discussions around the topic of biosolids can often be emotional and filled with misconceptions. The topic can certainly be considered controversial; which may intimidate some presenters. This controversy has its' foundation in the public's deep seated concerns about biosolids and their potential for negative impacts on air, land, soil, water and ultimately of course, on human health. Although the facts and more than 30 years of research and experience in Ontario alone support the positive perspective of biosolids recycling, many people fear that by accepting the use of biosolids they are opening themselves and their environment to the potential for serious harm.

The media reports about the use of biosolids are confusing and often misleading. In addition, the public is often confused about the difference between treated municipal biosolids and other substances such as manure. In the aftermath of the tragedy in Walkerton for example, many people confused the untreated animal manure that was a contributing factor in the contamination of the town's water supply with the use of municipal biosolids. The media and public are also unaware of the differences between good management practices and poor practices and the potential health risks. Clearly there is a deep public mistrust of anything that appears to be a threat to health and to water quality.



In public meetings there are a number of questions and issues that have been raised over the years. The more common concerns and questions you may encounter are outlined later in this guide along with some thoughts about how you might choose to deal with these questions. Keep in mind that the public has a right to be concerned about health and environmental protection. This video is intended as a tool to use in helping the public understand that the reuse of biosolids is carried out with care and concern for human and environmental safety.

That education process to be effective should include questions and discussion. Of course, as the presenter, you will need to facilitate and control the discussion to a certain degree, in order to ensure that time limits are respected, everyone has an opportunity to join in, and that no personal animosities develop out of debates or discussion.

One of the key issues in facilitating a group session lies in the ability of the presenter to stay calm and neutral, to keep from adding to an emotional or upsetting discussion. One thing that often gets in the way of that neutrality is the perception that the group is attacking your position, your department's position, or even your organization's position. Remember that if an emotional response arises it is not likely a personal attack, it is simply their reaction to something that they find deeply upsetting.

## Reality Checks

In biosolids presentations, you may find a number of instances where the audience may perceive the content in conflict with the reality of their own experience, or with some perceived experience they have read about or heard about.

You will need to consider that your presentation may be seen as reflecting the “best of all possible worlds”, or that you are holding back some terrible truth from them. Be patient and when you hear or see a reaction from an audience member that might indicate that they feel you are not being truthful; be sure to explore their concerns by asking for their input.

Remember as you speak with the audience, if they make comments such as “it smells bad it must BE bad for you” they are just telling it like it is, at least “like it is” in their perception. After all, a fact is a fact, if you think it is. So some negative comments may not in fact be accurate comments, or may be based on the individual’s own agenda.

Some people also work hard at getting centre stage in any session, and some of the more powerful and negative reactions may be motivated by just that, an individual looking for a chance to shine in the group.

But most of the time, the person who raises negative concerns, or suggests that you have not been truthful or accurate in what you are saying is acting out of a deep concern, which while it may be based in error is still a valid concern to them. They are attempting to offer a “reality check”. Dealing with the objections, questions, and concerns honestly will make a positive situation out of a potentially negative one.

When you encounter a reality check situation, acknowledge the concern, and determine (if applicable) where it came from, or if the thought or concerns is pervasive among members of the group. For example, if a participant says, “people in the US have died from biosolids,” ask where the person heard this, and if that is something others in the group have heard as well. Chances are they will not be certain where they heard it, and in fact they may be confusing something like cryptosporidium outbreak, or some other incident.

Acknowledge that if this were true you might also be concerned, and then explain that in fact, there have been no known cases of any health implications arising from the use of biosolids, not even among workers, when used with appropriate precautions. Explain that if an individual ingested the material then it would certainly cause a problem, just as climbing into septic material or walking through a sanitary sewer would also pose a risk. Be calm, clear and patient and remember that the person has a very real concern and needs to be responded to seriously and with care.



## Dealing With Upset Individuals

In your presentation audience you may encounter an individual who is upset, angry or deeply emotional when discussing biosolids. This is a difficult situation for the presenter, and sometimes has a very negative effect on the rest of the group as well.

For many people anger is an obvious emotion. For some people it does not show as easily. You will need to observe closely the person's communication to detect some angry people. What they say, the tone of their voice, the choice of words, and their posture and facial expressions are some of the indicators of angry people. It is wise when preparing to present what can be a controversial topic, to take a few moments to prepare for dealing with upset or emotional people.

It is wise to try to diffuse the anger or other strong emotions and focus on the concern rather than on the emotion itself. While there is no "magic bullet" to use in these situations it is none the less often quite useful to try a simple reflective technique in your dialogue. In addition there are some simple steps you can take to help prevent the emotion from escalating. Read through the next sections for some tips and techniques for dealing with these situations.

## Techniques For Dealing with Emotional Dialogue

1. **Acknowledgement** is the first step to diffusing any strong emotion, including anger. One way of dealing with the person's anger is simply to acknowledge it openly – "I can see that you are very upset."
2. Ensure that your own body language is relaxed and non-threatening.
3. Stand a good distance from the person – do not attempt to get into their personal space (a couple of feet around them).
4. Use a calm and quiet voice.
5. Avoid trigger words – these are words that can escalate a response; for example, a phrase such as "you environmental types" – especially when combined with a voice tone or body language that adds to the potential derision in the phrase can certainly be a trigger.

Select your language carefully – trigger words in an angry or emotional situation can escalate a tense situation very quickly.

6. Show the person you are listening – nod and acknowledge what they are saying. Try using a simple technique where you rephrase back to them the gist of their comments using a steady calm voice. This will

allow their concern to be on the table for discussion but will reduce the impact their tone and vocabulary choices may add to the comments.

For example, if you are faced with an upset or angry voice and body language and the person says something like - " if we allow these things to be placed on farms around here we will end up poisoning our water" - try responding with a calm, quiet voice and body language.

Use a rephrased statement such as " I understand that you have concerns about water." In fact, protecting water is a concern you share with the legislators in the province whose regulations reflect the same concern. How and where and even when biosolids can be applied are detailed in the regulation, and many of those regulatory guidelines reflect the best way to keep our precious water resources safe from any type of contamination."

7. Reduce or eliminate hand and other gestures, which might be common to your ordinary conversational style – they may be seen as threatening in an angry situation.
8. Remember that angry audience members are not really angry with you - they are directing their anger not at you but at the symbol you represent – in this case it is likely to be the fear of biosolids. If they see biosolids as a threat to the health of themselves or their family then their anger is founded in fear and can be quite powerful. They may be expressing frustration at a situation they cannot control or one whose outcome they fear. Put yourself in their shoes and imagine that someone appears to be threatening you or your family's health and well being.
9. Try a reflective approach – turning from emotion to discussion through empathy - when dealing with angry statements. This can often be done through a simple technique such as empathetic reflection.

Begin by rephrasing their statement. For example "I understand that you're concerned about biosolids used on land in your area. I might be just as concerned if I were not totally comfortable with the use of these recyclable nutrients. In fact, many other people have expressed similar concerns in the past. But, we have found that the way the material is researched, the care the municipalities take in testing the materials and the way in which the material has proven to



be safe for over 30 years in Ontario has changed their minds about biosolid safety. Etc.

The technique is often referred to as “feel-felt-found” and is used in many kinds of interactions to diffuse anger or offer a calming influence in a heated discussion where the angry or upset person is simply upset due to some expressed or unexpressed fear. It is an excellent technique but will only be successful if you can really be empathetic and express your empathy honestly.

The following section outlines some questions that are frequently asked during presentations. They do not represent the only questions you will be asked, however they offer a starting point for your additional local and current research.

## FAQ - Common Questions and Concerns



As a presenter you may be asked a wide range of questions, depending on the nature of the presentation, the type of audience and the most current media reports that your audience may have encountered. However, the following areas of question and concern are often raised.

In preparation for the presentation you may want to add to this list any local issues that may arise as questions and spend a few moments thinking about how best to respond.

The responses shown here for the Frequently Asked Questions are not the only possible responses, but they provide a suggestion for how you may deal with these questions.

### **Q. What are municipal biosolids?**

Municipal biosolids are the treated, quality controlled, by-products of municipal sewage treatment. Wastewater from residential and industrial sources is treated at municipal treatment plants that are approved by the Ministry of Environment. During this treatment, there are two main by-products: "effluent" or treated water, which is discharged back into the local water source, and "wastewater solids" which are processed further. When processing is complete and the material meets strict quality standards, it is called a biosolid.

Biosolids are organic in nature and contain fertilizer constituents including nitrogen, phosphorus and micronutrients, and metals.

### **Q. How are biosolids treated?**

Biosolids are biologically stabilized materials resulting from an approved treatment process. In Ontario, stabilization is usually accomplished by subjecting wastewater solids to anaerobic or aerobic digestion. Stabilization decomposes the solids, reduces odours and destroys most of the bacteria in the material. The stabilized solids are called biosolids when the material meets strict quality criteria as set out in Provincial Guidelines and is of benefit to agriculture. Biosolids consist mainly of organic matter that is rich in plant nutrients. Some biosolids are further processed through technologies such as dewatering, composting and pelletizing.

### **Q. Didn't biosolids cause the contamination of the water in Walkerton?**

The contamination of the water supply in Walkerton resulted from animal manure entering the well supplying the Town's drinking water. Land application of biosolids from a wastewater treatment plant did not contribute in any way to the tragic events in Walkerton.

### **Q. Don't land applied biosolids contain pathogens?**

The treatment processes commonly used to treat biosolids prior to land application significantly reduce the number of pathogenic organisms present; however, the treated material may still contain pathogens. The guidelines and regulations that apply to the land application of biosolids are designed to ensure that these pathogens do not cause adverse human health or environmental impacts by controlling when and how biosolids are applied to the land, the types of crops that can be grown on land that has received biosolids, and the waiting period after a land application that must be followed to allow residual pathogens to die off naturally.

### **Q. What are the biosolids management options in Ontario?**

The management options for Ontario biosolids are landfilling (disposal), incineration (disposal) and land application (beneficial re-use), composting (beneficial re-use) or manufacture into a dry fertilizer product (beneficial re-use).

### **Q. Are there different types of land application?**

Land application can utilize a variety of forms of biosolids such as liquid, cake, pellets and composted material. The biosolids can be used in forestry, land reclamation and for agricultural application.

### **Q. Is land application of biosolids safe?**

Yes, over the past 30+ years, no adverse effects on human or animal health, crop productivity or the environment have been documented in Ontario. The U.S. National Academy of Sciences, U.S. Environmental Protection Agency, European Union, Water Environment Federation, Canadian Federal and Provincial Governments, the University of Guelph and numerous academic institutions world-wide have conducted extensive, long-term research. They have concluded that land application of biosolids, when practiced in accordance with responsible Guidelines and regulations, is beneficial and poses minimal health or environmental risk.

### **Q. Is land application of biosolids regulated in Ontario?**

Yes. Ontario's biosolids program is regulated under The Nutrient Management Act.

The Regulations define biosolids quality standards, the receiving site characteristics and numerous application constraints such as crop suitability, soil permeability, soil quality standards, slope, depth to ground water, biosolids application rate and timing, and separation distances from waterways, wells and residences.

### **Q. Who enforces the Regulation?**

The Ministry of Environment (MOE) enforces the Nutrient Management Act as it pertains to biosolids to ensure that practices comply with the Regulations.

### **Q. What approvals are required prior to land application?**

Before biosolids can be land applied the following approvals are required:

- Quality of biosolids approval – the generator must test the biosolids to ensure the material does not contain constituents that could harm public health, the soil, crops, livestock or the environment.
- Application of biosolids, also referred to as Non-Agricultural Source Material (NASM), to a parcel of agricultural land must be done under an approved NASM Plan. NASM plans are developed by a certified NASM Plan Developer and submitted for approval to the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). The NASM plan includes all considerations of the application including: site characteristics; soil type, phosphorus and metal levels; crop to be planted; application rates; source of biosolids; separation distances to wells, waterways and residences; depth to ground water; and scaled site maps showing exact field location.
- The Regulation requires that those involved in applying biosolids to agricultural land be licensed or certified. To become certified or licensed, a person must take training prescribed by OMAFRA and pass an examination. Training covers the regulatory requirements and best management practices to protect public health and water and soil resources.
- NASM Plan developers must be certified to prepare the plans, companies applying biosolids must be licensed and staff managing the application be trained. The staff who apply the biosolids must also be trained and licensed.
- Contractor Systems Certificate – provided by the MOE indicating that the contractor satisfies defined requirements and operates in a safe manner. The Systems Certificate is a comprehensive document that also includes vehicle registration, insurance coverage, pollution clauses, training requirements, reporting procedures and day-to-day record keeping requirements.

Enforcement of compliance to the regulations is provided by the Ministry of the Environment (MOE) and any violation is enforced with strict penalties.

### **Q. Do Ontario biosolids contain pathogens?**

Yes. While wastewater treatment eliminates most pathogens, some still exist in biosolids. There is a wide range of pathogens that could be in wastewater solids i.e. before it is stabilized; however, stabilizing the solids eliminates the majority of the pathogens. The remaining pathogens typically die off very quickly as they are unable to survive in the relatively cold, dry environment of a farmer's field. As an additional safe guard, the Regulation does not allow for livestock access to the application site or harvesting of crops for a specified period, and specify separation distances to watercourses and wells.

Research on pathogen risk has concluded that the thousands of sewage treatment plant and biosolid industry employees i.e. people who are in constant, close contact with wastewater and biosolids, enjoy the same level of health as the general public. Samplings of biosolids from various plants indicate that biosolids do not contain E. Coli 0157:H7, the strain that infected the Walkerton water system.

### **Q. Do Ontario biosolids contain metals?**

Yes, biosolids contain varying amounts of metals. It is important to understand that all soil including the soil in your backyard contains metals. It is also important to understand that many of the regulated metals are also micronutrients that are essential for plant growth as well as human and animal health. Copper, Molybdenum, Nickel, Zinc, and Selenium are important for plant and animal development and can be found in most multivitamins for human consumption.

### **Q. Are the metals and pathogens in biosolids dangerous when applied according to Guidelines?**

No. Biosolids are tested for metals to ensure that constituent levels are not dangerous to human or animal health, crop productivity or the environment. Contaminant levels and application rates are set by the Ontario Ministries of Agriculture, Food and Rural Affairs (OMAFRA), Environment (MOE) and monitored by the MOE. Biosolids that have any materials that exceed the established safe levels cannot be land applied – they must be incinerated, land filled or disposed of in another manner.

### **Q. How do contaminants get into the biosolids?**

Organic and inorganic contaminants enter sewers in both domestic and industrial wastewater. Domestic contributions are derived mainly from human foodstuffs and household chemicals. Industrial contributions are derived from industrial processes and are controlled through strictly enforced sewer use bylaws that restrict and monitor the amount of contaminants entering the sewer system. Regular analytical testing is conducted by municipalities to ensure levels are not exceeded. Modern treatment processes and strict controls on discharges to sewers contribute to high quality, recyclable biosolids. Detailed studies show that organic contaminant concentrations, including dioxins, PCB's and furans in Ontario biosolids, are at low levels less than United States regulatory standards. Concentrations of inorganic contaminants, such as

metals, are also low and, to ensure public safety metals standards, are regulated by the Nutrient Management Act.

#### **Q. What sort of tests are conducted?**

Samples of biosolids are regularly collected by the generator and tested at accredited, independent laboratories for metals, nitrogen, phosphorus, solids and other parameters. Test results are provided directly to the generator and reported to the MOE. Material that fails to meet the safety standards is not permitted for land application.

Professionally trained agricultural experts, such as professional agronomists and Certified Crop Advisors, advise farmers on nutrient and cropping requirements. For each proposed application site, soil samples are taken and tested for pH, phosphorus and metals at accredited laboratories and the results are provided to the farmer, the spreader and the MOE. If the proposed application site soils are not consistent with the appropriate soil profile, the site is not permitted for biosolids application.

#### **Q. What happens to metals that are added to the soil?**

Many of the metals (e.g., manganese, iron, zinc, copper, boron, and molybdenum) are micronutrients required for crop development. These metals are natural and necessary components of healthy plant growth and are absorbed by the plants. Selenium and cobalt are important for animal health, including humans, and aid in the adsorption of vitamins.

Other metals (e.g., arsenic, cadmium and chromium) serve no known biological function. They form insoluble precipitates on the biosolids and soil materials. There is very little tendency for them to be taken up by plants or to migrate to surface or groundwater.

The Regulation for metal loading in Ontario soils are very conservative. Experiments conducted by the University of Guelph, OMAFRA, Environment Canada show no detrimental crop or environmental effects even where heavy metal loading was several times the Ontario limits for biosolids. These findings echo the results of numerous international studies and it has been concluded that the Ontario limits are protective of public health, soil quality, livestock and the environment.

#### **Q. What is the agricultural value of biosolids?**

Biosolids contain a wide range of materials that are of agricultural value. As a fertilizer equivalent, the nitrogen and phosphorus in biosolids has a value of approximately \$250/hectare. Biosolids also add micronutrients, important for crop growth. The high organic matter levels in biosolids also improve soil strength and structure, moisture retention and permeability while reducing the potential for wind and water erosion. The present Ontario biosolids program saves farmers approximately \$5 million annually in fertilizer cost

### **Q. How much do biosolids cost?**

Typically, biosolids are provided to farmers free-of-charge. The generator compensates the biosolids contractor. Farmers are not paid to accept biosolids. The challenge is balancing the ongoing supply with the seasonal demand.

### **Q. When are biosolids land applied?**

Biosolids are not applied during the winter, as it is too difficult to incorporate the material into the soil when it is frozen. During the winter, biosolids are stored by the municipality either at the wastewater treatment facility or in a specially designed storage facility. Biosolids are land applied during the spring, summer and fall depending on weather and cropping schedules.

### **Q. What crops are suitable for biosolids land application?**

Biosolids are well suited for field crops such as corn, cereals, canola, soybeans, hay, pasture and sod.

### **Q. What are the requirements for record keeping?**

Accurate computerized records are kept of exact application site locations; rates of biosolids application; soil pH and phosphorus levels; farmers' names and addresses; sources and quality of biosolids; MOE certificates of approval and other pertinent information. The contractor, municipality and MOE maintain these records.

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Remember that these are not by any means the only possible questions you may be asked, they do however, form a starting point for you to develop a list of questions you feel may be asked by your group.

Be sure to take the time to think about the nature of your audience and the concerns they may bring to the session. Create a list of questions or areas of specific concern you feel may be raised in the session. Do a little research into these areas and prepare some ideas about how you might respond to these concerns if they are raised. Be sure to do some on line searching for more background information at the WEAO web site and other sources of biosolids information.

## Pre-Presentation Checklist

- ☑ Watch the video several times **taking notes about the key ideas** in the video which you are planning to address further in your presentation and/or the key ideas you feel will help answer the concerns of your audience.
- ☑ **Read through the presentation notes you have made.**
- ☑ **Read over your presentation for understanding.** As you read, underline words, ideas, or content that you need to clarify. If you need more information about some specific topic do a little research. It may be helpful to practice in front of a co-worker or friend who has no expertise in the field of biosolids; they will quickly point out anything that is unclear.
- ☑ **Think about and anticipate questions.** Return to any issues or areas covered in the video which may raise some questions among audience members. Seek out the answers with resource people, or discuss these topics with people who have made presentations to similar audiences in the past.
- ☑ **Be current,** access up-to-date information from journals, WEAO, or other associations, Ministry publications, web-sites or other reference sources to make certain you are delivering the most current information.
- ☑ **Run through the whole video and your presentation aloud.** This will give you a clearer picture of the content of the overall presentation, and help you to choose any "bridging" materials you may need to fill information gaps for the whole presentation. For example, overhead slides to show newspaper articles, or slides that highlight facts or figures that are pertinent to your audience.
- ☑ **Edit for clarity and the audience as well as your time constraints.** Refresh yourself on the time you have allotted for your presentation and be sure that the remarks and the video can be delivered within that time allowing for questions and discussion.
- ☑ **Get to know the presentation related equipment. Plan to be at the presentation site in advance of the session.** Before you make the presentation take a tour of the TV/DVD/projector – whatever devices you are using. Nothing can derail a presentation more quickly than a device that is not hooked up correctly, microphones that have no batteries and other types of logistical failures.



## PRESENTING AND FACILITATING

### Quick Tips & ideas

#### Preparing Opening Remarks

In preparing your opening remarks be sure to include a brief orientation about what the video contains and its purpose – you may want to include

- A brief explanation of the sponsor and their role in developing the material,
- An overview of why they chose to develop it
- A general sense of what they will see and what to expect from the video.



#### Keeping Your Audience Engaged

Outline a few questions you want them to keep in mind as they watch the video, or outline some specific information you want your audience to discover. This will keep the audience engaged and active while they are watching the video.

*For example, if you had a group made up only of municipal council members you might point out that the video not only explores biosolids reuse but also refers to sustainability and to the role each of us plays in generating biosolids and in protecting the quality of wastewater and ultimately biosolids. You could then ask them to pay particular attention to these aspects of the video indicating that you would like to discuss these aspects of the video in more depth with the councillors after the video is complete.*

For a public audience these might be questions such as “ while you watch, note the three most important messages you feel the video communicates” or “ as you watch, take note of the things you want more information about once the video is over.” If you have a more expert audience, you might ask them to note what major concerns the video suggests that the public might have with respect to biosolids. You might ask them to note how this video could help their public education and information programs. Gauge your questions to match the audience and your presentation goals.

#### Following-Up the Video

Be sure to follow-up the video by leading a discussion based on the instructions you gave at the beginning of the video. To do this, when the video is complete, ask the audience to reflect back to the questions you posed before showing the video. Be sure to allow time for this in your presentation.

## Debriefing the Video - Asking Questions

Asking questions is an important tool often used in the debrief section of presentations. Good questions can be used to:

- stimulate thoughts, ideas, and reflection
- focus thinking in a specific direction
- gather information
- help your audience see things from another perspective
- encourage group participation

Keep in mind that there are two basic types of questions, open-focused and closed-focused.

### Open-focused Questions:

- Cannot be answered with a simple one word "yes" or "no." Often start with who, what, where, why, or how. Used to open up a conversation, explore ideas, and gather information.

### Closed-focused Questions:

- Used to gather very specific information. It usually elicits a one-word answer, such as a simple "yes" or "no." When you want to close an area of discussion or solicit a straightforward response these questions are a good tool.

By asking good questions and engaging your audience in the presentation you will help keep everyone interested, actively involved and you will have conducted a session that is focused on meeting your goal(s). The use of good questions is especially important during the debriefing and in the dialogue that may ensue during the period where the audience is asking you questions.

In smaller groups (less than 20) you need to prepare for a situation where a single viewpoint or concern to dominate the discussion. If this occurs, you will need to facilitate the group toward opening the discussion to other issues.

## **Communicating On All Channels**

Remember that as you present, your voice tone and your body language form part of the communication message. These “channels” of communication can sometimes have as powerful an impact as your words themselves. If you have access to a video camera, tape yourself making your presentation. You may be surprised at what you see. If you have no camera to work with, ask others to watch you present and get their feedback on how your voice, the tone of your voice and your body language are perceived.

## **A Sample Planning Guide**

Both a completed and a blank sample of a presentation planning guide follow in this material. The completed form offers an example of how to use this tool, and the blank copy of the form is for you to copy and use in planning your presentation.

Remember that professional presenters use these types of tools and techniques to prepare for each of their presentations. This is the kind of detailed planning that makes professional presentations seem so smooth, effortless and involving for the audience.

No matter how well you know this topic, take the time to plan your presentation carefully to ensure that this video and your presentation are as positive as possible.

(SAMPLE)

## PRESENTER'S PLANNING GUIDE

### LOGISTICS

<b>Audience:</b>	Regional Municipality of Anywhere in Ontario		
<b>Location of Presentation :</b>	Region offices 460 Anywhere Street		
<b>Contact:</b>	Mr. S. Ludge Waste Water Treatment Engineer S. Ludge@water.com		
<b>Contact #'s -</b>	<b>(555) 555-5555    (555) 555-5155</b>		
<b>Date of Presentation:</b>	October 18, 2003	<b>Time of Presentation:</b>	3:00 p.m.
<b>Time Available for Presentation:</b>	1 hour	<b>Number of People Expected:</b>	20
<b><i>Special Interest or Focus of Audience:</i></b> Trying to determine if they should begin a program to apply biosolids to agricultural land. <b><i>Questions that may be raised or concerns the group may bring to the forum.</i></b> <b>What public concerns are there – what Ministry guidelines apply, what can we do to get started – how does this process work.</b>			
<b>Notes:</b> <b>There is a large rural community here and they are currently sending biosolids to landfill – they are concerned about this as there are wells nearby and the landfill site is close to closing. They want to manage this process more efficiently. They have a strong recycling program in this Region and lots of environmental and community groups that work positively with the staff to expand their efforts.</b>			

## CONTENT PLANNING *(sample)*

<b>Goals:</b>	The primary goal is to provide the municipality with information about biosolids to help them determine to go forward with a program. The secondary goal is to detail the benefits of recycling biosolids.
<b>Objectives:</b>	<input checked="" type="checkbox"/> Make the audience aware of what they need to do to prepare for biosolid recycling. <input checked="" type="checkbox"/> Build understanding of steps needed to get others to agree. <input checked="" type="checkbox"/> Ensure that everyone understands the public and council education issues they will face in order to be successful. <input checked="" type="checkbox"/> Encourage the audience to make the link between the values of recycling biosolids and the local water protection program.
<b>Content Planning</b>	
<input type="checkbox"/> <b>Introduction:</b>	<b>Outline purpose of presentation, explain the goal, and outline the objectives. Mention the sponsor of the video, the audience it is aimed at, explain that it will offer an overview of the process and focus on the public's concerns. Explain that it offers an overview – and a place to begin discussion.</b>
<input type="checkbox"/> <b>Positioning the Video</b>	<b>Tool for public education, in this session it is a tool to generate discussion with the municipality to explore the range of questions about benefits, values and protection protocols related to biosolid recycling.</b>
<input type="checkbox"/> <b>Other topics to cover</b>	<b>The municipal role, how to get others on side and what to do next in the process.</b>
<input type="checkbox"/> <b>Other tools</b>	<b>PowerPoint slides to describe permits, and other details this group will need to consider.</b>
<input type="checkbox"/> <b>Ask the audience to</b>	<b>Watch for issues they want to know more about. List key concerns the public may have about biosolids and note how the video deals with these concerns.</b>
<input type="checkbox"/> <b>Debrief</b>	<b>Encourage questions after the video by asking the group to explain what the concerns were and how the video dealt with them, and then ask for the areas they saw that they would like more information about – then present the overhead slides and ask for discussion.</b>
<input type="checkbox"/> <b>Closing the Presentation</b>	<b>Summarize the session and reiterate the key points that need to be decided.</b>

# PRESENTER'S PLANNING GUIDE

## LOGISTICS

<b>Audience:</b>		
<b>Location of Presentation</b> :		
<b>Contact:</b>		
<b>Contact #'s - Voice:</b>	<b>Fax:</b>	<b>e-mail:</b>
<b>Date of Presentation:</b>	<b>Time of Presentation:</b>	
<b>Time Available for Presentation:</b>	<b>Number of People Expected:</b>	
<b>Special Interest or Focus of Audience:</b>		
<b>Questions that may be raised or concerns the group may bring to the forum.</b>		
<b>Notes:</b>		

# CONTENT PLANNING

<b>Goals:</b>
<b>Objectives:</b>
<b>Content Planning</b>
<input type="checkbox"/> <b>Introduction:</b>
<input type="checkbox"/> <b>Positioning the Video</b>
<input type="checkbox"/> <b>Other topics to cover</b>
<input type="checkbox"/> <b>Other tools</b>
<input type="checkbox"/> <b>Ask the audience to watch for</b>
<input type="checkbox"/> <b>Debrief</b>
<input type="checkbox"/> <b>Closing the Presentation</b>

<b>Session Date:</b> October 18 2:00 PM	<b>Overall Time Available:</b> 1 hour
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<b>ACTIVITY</b>	<b>TIME</b>
Introduction	5 min.
Show video	15 min.
Questions and Discussion	30 min.
Use overheads to present additional information	15 min.
Discussion and questions	30 min.
Closing remarks and hand out a brochure	5 min.
<b>TOTAL TIME</b>	1 hour 40 min.

<b>EQUIPMENT NEEDED</b>	
<input checked="" type="checkbox"/> <u>digital projector, &amp; computer</u> <input type="checkbox"/>	
<input checked="" type="checkbox"/> <u>PowerPoint show on CD-ROM</u> <input type="checkbox"/>	
<input checked="" type="checkbox"/> <u>Brochure materials</u> <input type="checkbox"/>	
<input checked="" type="checkbox"/> <u>Video – Sustainable by Nature</u> <input type="checkbox"/>	



# TIME PLANNING

<b>Session Date:</b>	<b>Overall Time Available:</b>
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ACTIVITY	TIME
<b>TOTAL TIME</b>	

EQUIPMENT NEEDED	
<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____
_____	

# APPENDIX

## Topic Specific Resources

## RESOURCES

There are a number of resources you may choose to access in preparation for the presentation. Be sure to read through any pertinent articles from local news publications. You may be able to access their archives on-line. This will help you keep current, and will offer you a perspective on what people in the area where you are presenting may have read or heard about biosolids. There is a wide range of additional information resources available; this list is intended as a starting point.

### Internet Sources

#### Canadian Resources

The following include government (provincial and federal) sites, as well as organizations – some are specific to waste water and water resource protection, and some provide a more general look at agriculture, water resources and protection, and the water industry.

#### WEAO

The Water Environment Association of Ontario (WEAO) is the pre-eminent organization of technical and professional individuals dedicated to the preservation and enhancement of Ontario's water environment. Founded originally in 1933 as the Canadian Institute on Sewage and Sanitation, it became the Pollution Control Association of Ontario in 1971 and changed its name to the Water Environment Association of Ontario in 1993 to reflect the name of the parent organization, the Water Environment Federation (WEF). The WEAO is the authoritative information source for water pollution prevention and control issues, and technology. WEAO's more than 1,300 members come from governments, universities, industries, consulting firms, equipment suppliers, contractors, and wastewater collection and treatment facilities.

Water and Environment Association of Ontario – this association is the driving force behind the development of the video - The Nature of Biosolids – The mission statement of this organization is to:

- Deliver high quality service to our members
- Promote and advance the water environment industry
- Provide a forum for our members to interact for educational, business, social and professional advancement
- Benefit society by enhancing public understanding and promoting sound public policy

Visit the WEAO site for more information about the video, biosolids recycling and other key issues related to water and pollution prevention.

- Water Environment Association of Ontario  
[www.weao.org](http://www.weao.org)
- Ontario Ministry of Environment

[www.ontario.ca/nasm-moe](http://www.ontario.ca/nasm-moe)

- Ontario Ministry of Agriculture, Food, and Rural Affairs
- [www.ontario.ca/nasm-omafra](http://www.ontario.ca/nasm-omafra)

Also you may broaden your understanding of some related issues by visiting:

- **[www.ec.gc.ca](http://www.ec.gc.ca)** – Green Lane of Environment Canada
- **[www.ocwa.com](http://www.ocwa.com)** – Ontario Clean Water Agency
- **[www.cwwa.ca](http://www.cwwa.ca)** – Canadian Water and Wastewater Association
- **[www.cwra.org](http://www.cwra.org)** – **Canadian Water Resources Association**

Beyond these resources there is a world of information on the internet. Search engines will turn up a range of resources and sources for additional information.