



Best Practices Guide

for the

**Collection and Handling of
Polyethylene Plastic Bags and
Film in Municipal Curbside
Recycling Programs**

This guide has been prepared by the Environment and Plastics Industry Council (EPIC) in co-operation with the Plastic Film Manufacturers Association of Canada (PFMAC), both of which are councils of the Canadian Plastics Industry Association. The information contained herein reflects the input of representatives from EPIC and PFMAC, consulting firms and municipalities, as well as program operators experienced in the recycling of post-consumer household polyethylene plastic bags and film in municipal curbside recycling programs.

For further information, please contact:

The Environment and Plastics Industry Council
5925 Airport Road, Suite 500
Mississauga, Ontario L4V 1W1
Tel: (905) 678-7405, ext. 234
Fax: (905) 678-0774
e-mail: ccirko@cpia.ca

The Plastic Film Manufacturers Association of Canada
5925 Airport Road, Suite 500
Mississauga, Ontario L4V 1W1
Tel: (905) 678-7405, ext. 274
Fax: (905) 678-0774
e-mail: centine@cpia.ca

Although EPIC and the PFMAC have endeavoured to provide accurate and reliable information to the best of their abilities, they cannot be held liable for any loss or damages resulting from interpretation or application of this information. The information is intended as a guide for use at your discretion and risk. EPIC and the PFMAC cannot guarantee favourable results and assume no liability in connection with its use.

The contents of this publication, in whole and in part, may not be reproduced or transmitted without proper accreditation to EPIC and the PFMAC.

May 1998

- This guide provides useful information to improve the quality of polyethylene (PE) plastic bags and film collected in municipal curbside recycling programs.

Contents

**NEED
TO
KNOW**

Introduction	4
Focus on Quality	6
Household Communication and Education Tips	8
Successful Best Practices for PE Plastic Bags & Film Recycling	12
Curbside Source-Separated Approach	13
Curbside Non Source-Separated Approach.....	16
Quality Control	19
Troubleshooting Guide	23
Case Study	25

Polyethylene (PE) plastic bags and film represent approximately 85 per cent, by weight, of all plastic film that is used in the typical Canadian household. Because of its low weight, high strength and ability to protect and preserve contents, PE film has displaced paper and other materials as the packaging material of choice in many common applications, such as grocery carry out sacks, retail sacks, bread bags, milk packaging, frozen food bags and over wrap. Once this material fulfills its initial role in a packaging application, it is often reused for short-term storage around the household.

Since curbside collection of PE plastic bags and film in municipal recycling programs first appeared as a demonstration project in the early 90s, there has been interest in the recycling of this material from consumers and municipalities across Canada. The Plastic Film Manufacturers Association of Canada (PFMAC) has worked to provide a market for this valuable material. Currently, over one-third of the collected PE plastic bags and film has been incorporated into applications, such as garbage bags and some retail boutique bags. The majority of the remaining film has been exported. There is, however, significant opportunity for more widespread use of this material in current and new applications. **The critical factor in capitalizing on these new opportunities lies in the quality of the material offered for use.**

To ensure a high-quality feedstock for reprocessing, it is important for municipalities to:

- work closely with the end markets to understand the market specifications and need for high-quality material;
- design collection and processing systems to provide suitable material in the most cost-effective manner;
- deliver effective information to the householders; and
- implement systems to monitor material quality prior to shipment to the reprocessor.

By carrying out the above, municipalities can produce consistently high-quality materials that will not only make the product easier to sell but most assuredly, will help to expand the use of the material into other product applications.

- PFMAC and EPIC developing new applications for recycled PE plastic bags and film
- key to greater use of material depends on quality of feedstocks
- new and existing opportunities demand the highest quality of material

Introduction

continued...

- **guide gives “best practices” based on analysis and discussion with program operators**
- **guide addresses two approaches: source-separated PE plastic bags and film collection and non source-separated collection**
- **shows how to maximize material quality and reduce handling costs**

The following guide is intended to help municipal recycling officials and program operators improve the quality of PE plastic bags and film supplied for reprocessing. It draws upon extensive discussions around the experiences of different program operators and presents the “best practices” – those which have proven over time to be the most efficient and cost-effective methods for the collection and the processing of PE plastic bags and film in municipal curbside recycling programs.

The guide takes the reader step-by-step through the design and implementation of “best practices” for successful curbside film recycling – specifically it discusses what is acceptable with regard to PE plastic bags and film for recycling and how the material is to be set out at the curb, collected, processed, stored and transported. By following these “best practices”, recycling operators will reduce the cost of collecting and handling the material while providing quality film material.

The guide addresses two approaches for the collection and handling of PE plastic bags and film. The first, and recommended, approach is that of **source separation**. However, since many communities are moving to greater co-mingling of materials at the curb e.g. two-stream collection, best practices for a **non source separated** approach are outlined as well.

In order for municipalities and recycling operators to attain the highest quality of material possible, they must ensure that the collected PE plastic bags and film fall within a pre-determined set of specifications or standards. These specifications have been derived by the plastics industry to ensure the quality of the material bought by reprocessors. PE plastic bags and film that are currently acceptable for curbside collected recycling initiatives include the following product types:

- grocery sacks;
- retail store carry out sacks;
- rinsed milk pouches and outer bags;
- bread bags, sandwich bags and bulk food bags;
- dry cleaning bags;
- diaper outer bags;
- frozen food bags; and
- over wrap for toilet tissue and paper towels.

The film applications which are NOT acceptable include:

- meat and cheese wrap;
- overwrap from boxed products;
- wax paper or stretch wrap;
- cereal or cracker box liners;
- chip, cookie bag or chocolate bar wrappings; and
- peat moss, fertilizer, weed & feed and other garden product bags.

The plastic used in the above applications is not compatible with the acceptable PE plastic bags and film material. It is important to provide material that consistently meets this specification. Otherwise, current markets will not accept the material. **Recycling operators are not encouraged to combine stretch wrap from other sources with household PE plastic film and bags. If included in the film bales, it presents additional handling problems for the reprocessor. It will also change the quality and consistency of the household film bales. Therefore, it is recommended that stretch wrap be collected and baled separately.**

- municipalities must meet the required market specifications
- only collect PE plastic bags and film which have been identified as acceptable
- if in doubt, only include PE plastic bags and film that have the # 2 HDPE or #4 LDPE codes

Focus on Quality

continued...

When shipping to a reprocessor, recycling operators should identify these bales as stretch wrap.

In addition to differentiating between the applications for the PE plastic bags and film previously mentioned, municipalities and operators also have a responsibility to ensure minimal – if any – contamination by other non-plastic materials, such as cans, glass, bottles, paper, etc. Contamination must not exceed 5% by weight of the total baled material.

PE plastic bags and film collected and baled at a materials recovery facility are shipped to an end market or intermediate reprocessor. If the material is to be incorporated into garbage bags and retail carry out sacks, for example, it has to be washed and extruded into pellets. Other markets, which may or may not require washed and pelletized material, include:

- plastic lumber for decks, lawn furniture, etc.;
- composites (i.e. wood fibre, plastic, etc.) for use in curbs and patio blocks; pallets; building products like shingles, shakes, doors and window frames; and fence posts; and
- protective packaging for shipment of durable products.

Currently, EPIC is determining the requirements for these other end uses.

The Environmental Choice Program has identified 10 subcategories of plastic film products and recycled content certification criteria. The information is contained in bulletin ECP-69-95. The PFMAC, working with Environment Canada, developed this guideline in order to promote film recycling. Municipalities interested in specifying household post-consumer recycled film material in plastic film products should contact the PFMAC at the address listed in the front of this guide.

- do not collect or mix in the feedstocks any materials that have been identified as being unacceptable
- contamination of film by other materials must not exceed 5%
- some plastic bags and film are not LDPE or HDPE and they usually have a barrier property that is not compatible with LDPE or HDPE film recycling

As with other recyclables, the quality of PE plastic bags and film is impacted by preparation for collection and householder acceptance of what should be set out.

Contamination may take the form of any item or material left in a plastic bag, including other types of plastic film and containers, metal cans, fabric, etc. Communication and Education (C&E) programs targeted at the householder are effective in reducing contamination.

C&E “BEST PRACTICES” – GENERAL CONSIDERATIONS

1. *Keep the message simple*

Delivering effective C&E information can be as easy as remembering to “keep the message simple”. Research has shown that people do not want to read text-heavy material. Capturing their attention and encouraging them to read on or listen is a function of an appealing “package” complemented with a snappy introduction or heading (and lots of white space in print pieces). Audiences must be able to grasp the key message from the heading and the images in a few seconds. Jamming many messages into a C&E piece to take advantage of the promotion investment is poor practice. Unless the objective is to create a new C&E piece describing the collection of many materials, provide one message. For example, if the objective is to increase the quality of PE plastic bags and film being collected, limit the message to what householders have to do to achieve that objective.

2. *Promoting one material will pull up the recovery rates of other recyclables*

C&E research shows that householders respond broadly to recycling messages, even if the message focuses on a single material. Recovery rates for other materials may increase as well.

- the degree of contamination in curbside collected PE plastic bags and film can be reduced through effective householder communication & education programs
- keeping the message simple will help householders remember message

Household Tips

continued...

- householders respond positively to recycling messages
- public perception is central to the success of the program— test your message beforehand
- have your message clearly identify a goal, i.e. reduce film contamination
- repeat your message often

3. *If possible, test the message and images for clarity and effectiveness*
How the public perceives the message is central to the success of your program. Always try to test the clarity and effectiveness of your messages. Conduct focus groups with people not associated with your office and collect feedback on how the information is presented. You may be surprised that people perceive the information in ways you had not imagined. This step will help you fine-tune the message to ensure that it is effective.
4. *Be specific about the goal of the message*
It's easy for householders to focus on the desired action if the goal is clearly stated. Set a target. For example, if PE plastic bags and film contamination is a problem, ask householders to produce contamination-free material for three weeks and be specific about the most common contaminants. According to community-based social marketing theory, new behaviour takes about three weeks to become ingrained. Provide information on how well householders did during the campaign and keep reinforcing the behaviour through additional communications.
5. *Repeat message as often as possible over several weeks*
Exposing householders to messages designed to change behaviour requires repetition. People need to see and hear the message repeatedly. Look for creative ways to reinforce the message over a period of weeks: a brochure delivered door-to-door; a news story published in the local newspaper; an interview on the radio news; or a message flashed on an electronic billboard.
6. *Repeat the message at least once a year*
Even though people know they should follow a certain procedure, they tend to fall back into old habits. Householders need to be reminded and re-energized about recycling periodically. The desired recycling behaviour should be reinforced at least once a year.

-→ 7. *Enumerate the steps you want people to take*
It's easier for people to follow directions if the information is organized by numbers. Explain how to prepare and set out PE plastic bags and film by taking them through a series of steps.
-→ 8. *People like to be thanked for their recycling efforts*
Repeated research on C&E messages reveals that people like to be thanked or acknowledged for their recycling efforts. Messages that recognize and congratulate householders for an action but encourage them to do more, receive the best response and praise.
-→ 9. *Employ a mix of mass media and community-based social marketing tools for best results*
Mass media tools such as newspapers and radio are most effective at building awareness of a simple message and conveying a single call to action. Community-based social marketing is more effective at achieving longer-term change in behaviour. Social marketing involves contact with an audience in a more direct and personal way. At its best, it seeks to solicit a personal commitment to engage in a new behaviour. But this type of contact can be costly in human and financial resources compared to mass media. Social marketing can be used in specific areas in cost-effective ways. For example, consider setting up a display in a public space and engaging hard-to-reach people in discussions about how to prepare and set-out PE plastic bags and film that is free of contamination. Target your audience – it may be more appropriate to set up the display in a neighbourhood, for example, with lower than average set-out rates or with language issues. Mass media could then be used to get to easier-to-reach householders. Remember, people need to be exposed to the message frequently over a period of several weeks.

- remind householders at least once a year
- offer clear directions and/or a series of steps
- thank people
- mass media (news-papers/radio) is effective for simple message
- community-based social marketing is also effective

C&E “BEST PRACTICES” – PE PLASTIC BAGS AND FILM

1. *Be conscious of wording*

In any communication or educational initiative for the householder, be sure to focus on words that identify PE plastic bags and film rather than using less discriminating ones such as flexible packaging. Householders may get confused over the latter example.

2. *Provide a list of Do’s and Don’ts*

Supply each householder with a simplified do’s and don’ts list. See the example below.

- provide householders with a clearly itemized list of do’s and don’ts
- use pictures to show householders what they can and cannot include
- use phrases like “PE plastic bags and film” instead of the confusing ones like plastic “flexible packaging”



Stuff your empty and clean PE plastic bags and outer wrapping into one PE plastic bag and then knot it.

Acceptable PE plastic bags and film:

- grocery sacks;
- retail store carry out sacks;
- rinsed milk pouches and outer bags;
- bread, sandwich and bulk food bags;
- dry cleaning bags;
- diaper outer bags;
- frozen food bags; and
- over wrap for toilet tissue and paper towels.

Unacceptable PE plastic bags and film:

- meat and cheese wrap;
- overwrap from boxed products;
- wax paper or stretch wrap;
- cereal or cracker box liners;
- chip, cookie bag or chocolate bar wrappings; and
- peat moss, fertilizer, weed & feed and other garden product bags.

This part of the guide will take the reader through both the “source separated” and the “non source separated” approaches. It will address:

- how PE plastic bags and film should be set out;
- how PE plastic bags and film should be collected;
- how PE plastic bags and film should be handled at the MRF; and
- how PE plastic bags should be stored and baled.

To help answer problems in respect to specific issues in plastic film management, a troubleshooting guide has been included on pages 23 and 24 of this guide.



- “best practices” are offered for two approaches to PE plastic bags and film collection
- source-separated approach is preferred collection method
- addresses PE plastic bags and film set out, collection, handling in the MRF, storage and baling

Source Separated

HOW FILM SHOULD BE SET OUT

Householders should be instructed to pack all empty PE plastic bags and film in one PE plastic bag, knot the bag and set the bag beside their recyclables box or beside their other bags if a bag program is being used. Knotting off the bags will help keep the inside bags dry and prevent them from being blown around. It is also recommended that householders wedge the bag between the rigid recyclables container and the bundles of fibre materials in order to prevent the bags from blowing away.

- have householders pack all PE plastic bags and film in one plastic bag
- bags should be knotted and set between larger recyclable container and fibre bundle
- bags should be feather light and squeezed to see if they hold rigid objects and if so, left behind with a note
- collection vehicle operator should place plastic bags and film in separate larger bag on truck or in a side compartment



HOW FILM SHOULD BE COLLECTED

The PE plastic bags should be feather light when they are picked up by the operator of the collection vehicle. The bags should be squeezed to determine the presence of anything rigid, such as glass, metal and plastic bottles. If it is determined that there are rigid materials in the bags, the bags should be left at the curb with a notice card, outlining why the plastic bag was left. It is imperative that operators wear safety gloves when checking the bags.

The collection vehicle operator should put the PE plastic bags into a separate larger plastic bag that could be attached to the truck or placed in a side compartment load hopper of the truck (fitted with a lid and a stuffing hole to contain the bags when the vehicle is a top loader).

Source Separated

continued...

Program operators indicate that the time to place the bags in a separate larger bag is minimal and is more than offset by the significant reduction in the processing required at the Materials Recovery Facility (MRF).

When the larger bag is full, it should be tied off and placed in the fibres (preferably the newspaper) compartment. The fibres will naturally compact the film, minimizing the impact of the low bulk density and high volume of the film.

Special Note:

It is not recommended that the larger plastic bag be put into the containers compartment because the containers will not compact the PE plastic bags and film. Also, container residues and broken containers will impact negatively the quality of the PE plastic bags and film if the film is put into the containers compartment.

HANDLING FILM AT THE MRF

When the fibres compartment is emptied at the MRF, the driver, or the floor spotter, should pick the large plastic bags out of the fibres and place them directly into a holding bunker, baler or other area. That area should be clean and clear of other materials to eliminate cross-contamination.

- leave notice cards for householders explaining why plastic bags were left at the curb
- once quality control measures completed, place plastic bag in larger bag attached to truck or in side compartment
- when larger bag is full, tie off and place in fibre (preferably newspaper) compartment, which will further compact PE plastic bags and film

Source Separated

continued...

FILM BALING

Ideally, the larger plastic bag should be placed directly into a small downstroke baler. This will eliminate double-handling and the need for any pre-baling storage space.

The baler operator should ensure the baler has been thoroughly cleaned to remove any residues remaining from previous baling operations.

- when fibre compartment is emptied at the MRF, place larger plastic bags away from other materials
- if possible, place directly into a downstroke baler
- ensure that the baler is clean, without any residues from previous baling



Bags should be kept in a separate area, away from possible contamination.

This best practice was developed to apply to situations where householders are co-mingling materials for curbside collection.

As there is little or no opportunity for quality control by the collection staff, the responsibility for quality falls to the householder and the processing staff. Although it is readily recognized that collection costs will be lower, processing costs will be higher. This is mainly because of the increased sorting requirements.

.....→ HOW FILM SHOULD BE SET OUT

Householders should pack all acceptable PE plastic bags and film in one plastic bag and knot before putting it inside the outer bag (in bag-based programs) or container they set out at the curb.

.....→ HOW FILM SHOULD BE COLLECTED

Bags of film will be collected with other materials and likely placed in a single or a two compartment truck. A collection crew member can do very little to improve product quality in these kinds of commingled systems.

.....→ HANDLING FILM AT THE MRF

In a bag-based program, it is recommended that the debagging process be done by an automated debagger to open the outer bag containing all commingled materials. There are automated debagging systems which are very effective at opening the plastic bags and emptying the contents. To minimize the number of times the bags of material are handled, the bag opening system should be inline in the process (i.e., all materials pass through the debagger rather than having sorters direct only some material through the debagger).

- responsibility for quality control falls on householders and processing staff
- collection costs will be lower but processing costs will be higher
- householders should pack PE plastic bags and film in one bag, then knot
- collected plastic bags will be placed in larger container set out at curb

Non Source Separated

continued...

- automatic debagger recommended to open bag containing commingled material and empty contents
- bag opening process should be inline in the process to minimize the number of times the bags of material are handled

Special Note:

In some instances, the debagger may open the smaller inside bag containing the individual bags. However, because only some of the bags will be opened, it is still of benefit to have the householder separately bag all household PE plastic bags and film. This allows processing rates to be increased and the opportunities for contamination reduced. Public education should stress the need to bag acceptable PE plastic bags and film.

In order to increase the effectiveness of the sorting of all materials and thereby decrease sorting costs, all PE plastic bags must be removed immediately before sorting any specific containers or fibre streams. By pulling off the knotted plastic bags and any loose acceptable PE film, other materials to be sorted will not be covered up. An example of an appropriate sorting line is provided on the following page.

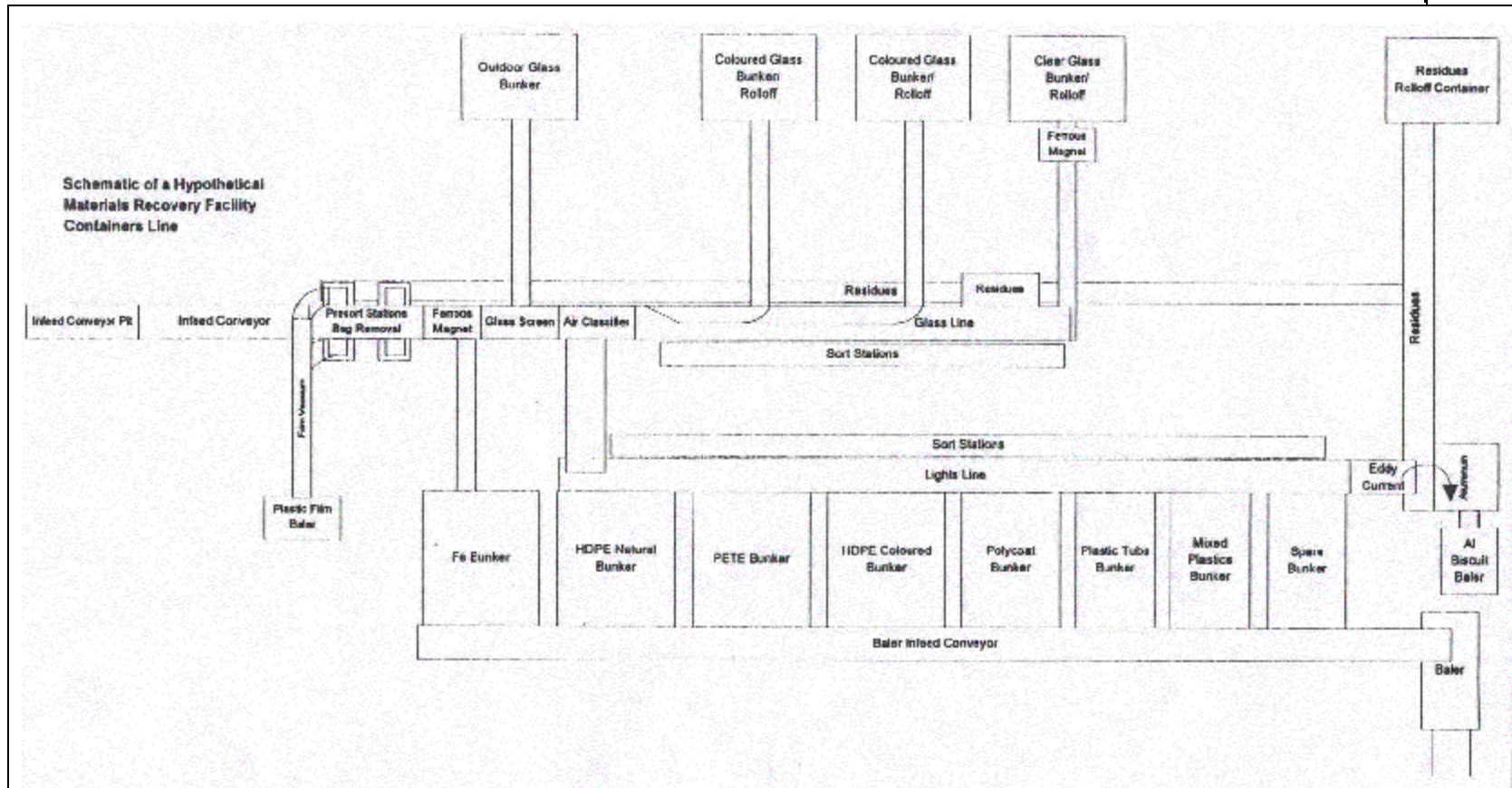
Special Note:

Development work is being carried out on vacuum/suction systems placed after the infeed conveyor. These systems remove loose PE plastic bags and film from the line and transport them to a separate storage area.

.....► FILM BALING

Before baling, the baler operator should ensure that the baler has been thoroughly cleaned to remove any residues from previous baling operations.

Non Source Separated
continued...



Quality Control

One of the primary reasons for spending time and resources ensuring that the highest possible quality control is built into the PE plastic bags and film collection system is because it makes good recycling sense. Manufacturers need high-quality feedstocks to produce high-quality products. The municipality will benefit from building solid relationships with reprocessors and from increased markets for its material. In addition, municipalities will be able to reduce their net operating costs.

AT THE HOUSEHOLD

The potential for contamination and the opportunities for quality control of the PE plastic bags and film vary depending on the collection methodology used in the program. In all programs where there is a vested interest in maximizing material recovery and quality, education of the householder is the first point of quality control. Residents should be provided with specific educational materials outlining those types of PE plastic bags and film that are acceptable and those that are unacceptable.

- residents should be provided with specific educational materials
- in the source-separated approach, the second quality control is the vehicle operator
- under the non-source separated approach, the quality control has to be done at the MRF during sorting

SOURCE SEPARATED APPROACH

Under the source-separated approach, the main quality control checkpoint is the vehicle operator. The operator has to determine if there is contamination by judging the weight of the plastic bag (it should be feather light) and squeezing the plastic bag for any rigid contents. If contamination is discovered, the operator should leave the bag at the curb with a notice explaining why the bag was not picked up.

NON-SOURCE SEPARATED APPROACH

The non-source separated approach requires that all materials are placed in one container or bag set at the curb. In this system, quality control at the curb is limited and thus, it must be performed at the MRF.

MRF SORTING

When sorting bags of PE plastic bags and film mixed with other materials, the bags should be the first item removed as they tend to cover other materials in the stream, resulting in reduced sorting rates, worker utilization and potentially, lower capture rates for all materials. Therefore, it is imperative that sufficient staff are assigned to remove the PE plastic bags and film at the front of the processing line. During sorting, the bags should be judged for their weight. If they feel heavy (i.e., heavier than a bag of bags should weigh) or if the sorter feels anything rigid when squeezing the bags, the bags should be treated as unacceptable residue.

Removal of Bags Holding Fibres and Containers

This addresses those programs where PE plastic bags are used to hold fibres (e.g. a grocery sack used to hold newspapers). If the bags are clean and free of contaminants (e.g. paper), they should be put into the bunker holding the acceptable PE plastic bags and film to be baled.

PE plastic bags holding containers should not be recycled due to possible contamination from liquid and food residues.

PRODUCT STORAGE

It is important that the PE plastic bags and film are not contaminated during storage. Care has to be taken to avoid cross-contamination with other materials on the floor.

PE plastic bags and film should be stored inside. Sunlight can damage the film as most film is not resistant to ultraviolet light. Excess moisture from rain can render the film unmarketable in certain applications.

- quality control measures must be focused on sorting and baling lines
- when PE plastic bags are mixed with other materials, bags should be pulled off first during sorting
- caution should be taken when recycling PE plastic bags holding fibres (e.g. newspaper)
- PE plastic bags holding containers should not be recycled due to contamination from liquid and food residues

Quality Control

continued...

PRODUCT BALING

Before baling, the baler operator should ensure the baler has been thoroughly cleaned to remove any residues from previous baling operations. In addition, the baler QC person should remove any contamination seen on the baler infeed line. When the bales are ejected, the faces of the bale can be further checked for contaminants. These may be removed by pulling them out or cutting off the face of the bales.

PRODUCT QUALITY SPOTCHECKS

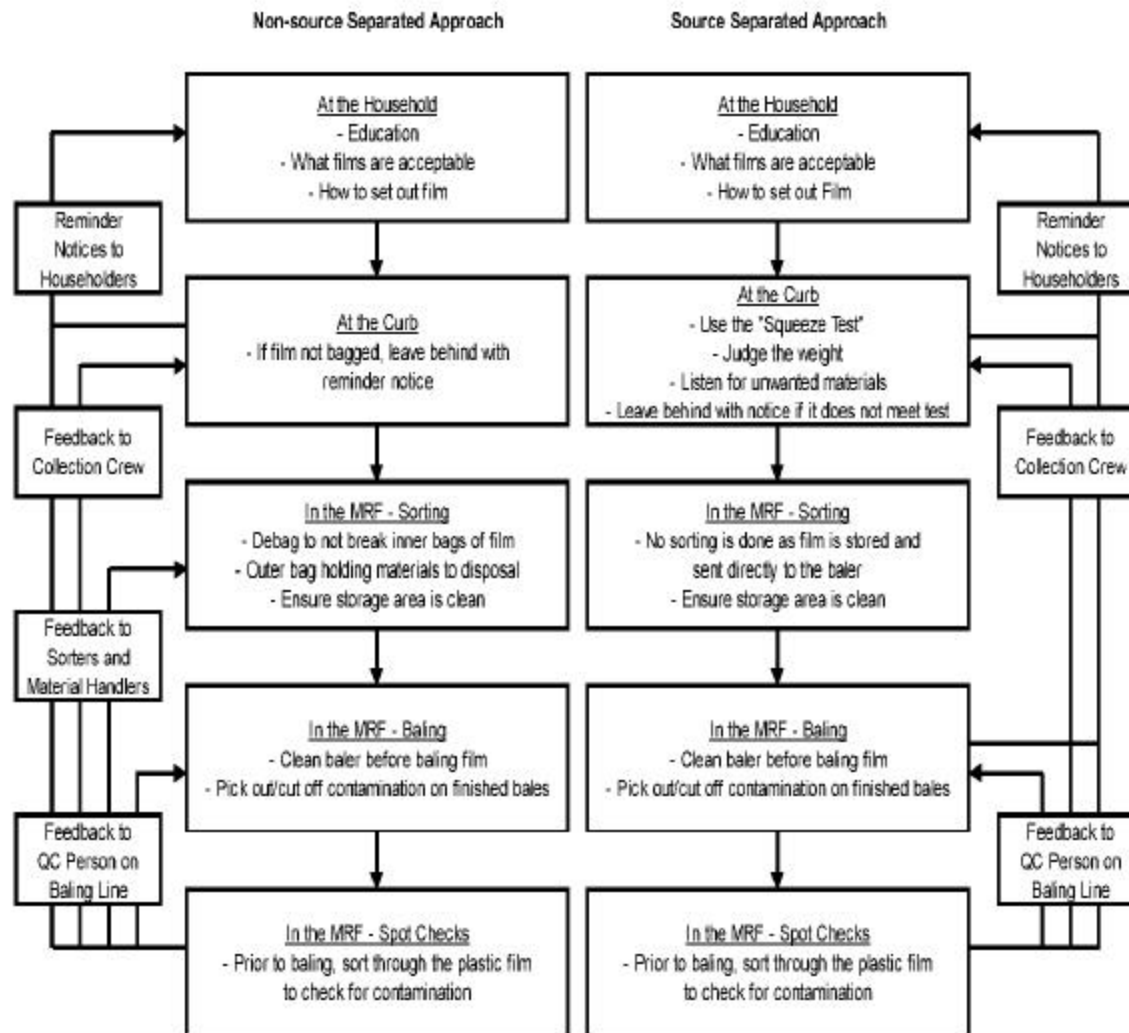
- avoid cross-contamination with other materials during storage
- PE plastic bags and film should be stored inside, away from sunlight and excess moisture
- quality control can be also be done during and after baling

Randomly select bags of film from the baler infeed line or bunker. Open the bags of PE bags and film and remove any non PE film. Weigh the quantity of PE film and non PE film found. This exercise will provide information on where quality must be improved in the collection system and process. For example:

- At the household - presence of non PE plastic film;
- At the curb - containers, fibres, other material inside bag when curb sorting is done;
- At the MRF sorting line and storage area - loose fibres, loose containers not found in bags.

The importance of quality control underscores the need for feedback to householders and the need for collection and sorting crews to ensure quality at each stage of the collection and handling process.

Opportunities for Quality Control



- the chart opposite offers several key points and strategies for optimizing the quality control in curbside collection systems
- the information contained on the preceding pages highlights individual quality control opportunities

Troubleshooting

- use the Troubleshooting Guide to help answer any problems which may arise in terms of specific issues relating to the management of PE plastic bags and film
- the Troubleshooting Guide offers solutions to some of the problems that recycling operators may encounter

TROUBLESHOOTING GUIDE

Problem	Solution	Source Separated Programs	Non-Source Separated Programs
<i>Too many film bags of the wrong type and other contamination</i>	<ul style="list-style-type: none"> • Look at your educational material to determine if the public could be confused. • Limit the educational material to outlining only <u>what is acceptable</u> rather than trying to describe what is and what is not acceptable. • Leave the film with a notice card explaining why it wasn't picked up if contamination is noted inside the bag 	<p>✓</p> <p>✓</p> <p>✓</p>	<p>✓</p> <p>✓</p>
<i>Too much time is being spent at the curb sorting the film</i>	<ul style="list-style-type: none"> • Make sure that you have asked householders to set their film all packed into one bag and tied off. If you can, have reminder cards available to give to the householders asking them to set the material out bagged. 	<p>✓</p>	
<i>The film is hard to remove from other materials</i>	<ul style="list-style-type: none"> • Reduce the opportunity for film to interact with other materials. When collecting the film put it into one large bag that, when full, is put into the fibres (i.e., ONP) compartment. 	<p>✓</p>	
<i>It takes too long to sort the film bags from the line</i>	<ul style="list-style-type: none"> • Ask householders to bag all their bags into one bag before setting out at the curb or putting it into their commingled bag and tie off. • Ensure the automated debagger is not opening the inside bag of bags 	<p>✓</p>	<p>✓</p> <p>✓</p>
<i>Sorting rates and contamination levels on other products is too high because of film plastic</i>	<ul style="list-style-type: none"> • Ensure that there are enough sorters assigned at the front end of the processing line to remove all of the plastic film so that sorters of other materials can adequately see what they are to sort. • Examine how the film is being collected. Ask householders to bag all their bags into one bag before setting out at the curb or putting it into their commingled bag. This will limit the possibility of interaction between the plastic film and other materials. 		<p>✓</p> <p>✓</p>

TROUBLESHOOTING GUIDE

Problem	Solution	Source Separated Programs	Non-Source Separated Programs
<i>The loose film takes up too much storage space</i>	<ul style="list-style-type: none"> Look at installing a vacuum system to move the loose film to a cage which takes advantage of the height of the building (<i>vacuum restricted to loose film only</i>). 	✓	✓
<i>Too many pieces of fibre in the film</i>	<ul style="list-style-type: none"> Do not try to recover all the plastic film that is used to hold household fibres at the curb. It is not always possible to get all the fibres out of the plastic bag (due to other contamination, static, etc.) so that the material meets market specifications. Pushing for higher recovery rates may limit market potential and drive up processing costs. 	✓	✓
<i>Too much food, liquid and other residue contamination in film</i>	<ul style="list-style-type: none"> Do not try to recover the plastic bags that are used to hold household containers at the curb. The bags could contain liquid and food residues, rendering the plastic bags unsuitable to end markets. Pushing for higher recovery rates may limit market potential and drive up processing costs. 	✓	✓
<i>Even doing everything above, specifications still not met</i>	<ul style="list-style-type: none"> Sample material and sort through all bags and all film to determine what contamination is there and where it would be occurring. Make changes where required. 	✓	✓

- if you have any additional questions regarding PE plastic bags and film recycling, please feel free to contact the organizations listed on page 2.

This section of the guide will illustrate the example of a source-separated collection system currently being used by the City of Peterborough, which is located northeast of Toronto. The example demonstrates the curbside collection of PE plastic bags and film.

CASE STUDY: CITY OF PETERBOROUGH

Source-separated collection of PE plastic bags and film began in 1991 in the City of Peterborough. Initially, the program started as a pilot to determine if collecting PE plastic bags and film for recycling was feasible. Today, all households in the City of Peterborough with access to blue box recycling, including those in apartments, can recycle their PE plastic bags and film.

Residents with curbside blue box service are asked to stuff their no longer useable PE plastic bags and film into one plastic bag. Once the bag is full, residents knot the bag and place the bag beside their blue box at the curb. These plastic bags are collected by the city's recycling operator and placed in a larger bag tied to the side of the truck. The city has played an active role in helping to develop markets for their PE film by requiring that these larger translucent bags contain 15 per cent household post consumer PE plastic bags and film.

When the larger bag is full, it is removed from the rearview mirror, tied and placed in the newspaper compartment of the truck. The newspapers help to compact the plastic bags thereby reducing the volume on the truck required to hold the plastic bags. As well, by placing the plastic bags in the newspaper compartment rather than the containers compartment, the plastic bags are kept dry and free from contamination by food and liquid residues. At the MRF, the large bags of plastic are separated from the newspapers and stored in a dedicated area in preparation for baling. Once baled, the plastic bags are stored inside prior to shipping to reprocessors.

- the City of Peterborough uses a source-separated curbside collection system
- residents asked to stuff PE plastic bags and film into one larger plastic bag and to then place beside their Blue Box at the curb
- collection truck operator then places plastic bags into a larger bag tied to the truck

Case Study

continued...

Householders living in apartments take their PE plastic bags and film to the apartment drop-off depot. There they place their plastic bags into a large, clear plastic bag or into a separate larger container having a lid and plastic bag liner. During collection, the recycling operator removes the large bag (containing the plastic bags), ties it and places it in the fibres compartment of the truck (or appropriate side hopper, if a top loading truck). A new bag is placed in the drop-off depot container dedicated to PE plastic bags and film.



As an example of how recycled post-consumer film can be used, the City of Peterborough requested that its next shipment of new blue boxes contain a level of 10 per cent recycled content, of which half is household collected film.

- when the larger plastic bag on the truck is full, the operator places it in the newspaper compartment
- the bags will remain dry and free from food and liquid contaminants that may be found in other truck compartments
- householders in apartments take their PE plastic bags and film to the apartment drop-off depot

