

Self-Assessment Procedure¹

How do I determine if my shop has good MRF management?

We have put together a checklist to help you determine if your shop has good MRF management. It has three parts:

- **Part I** asks questions in 6 different sections and covers the features of the management plan that are common to all shop MRF systems.
- **Part II**, also with 6 sections, covers individual processes, departments, or MRF systems within the shop. Copies of Part II can be distributed and completed for each department or system.
- **Part III** is a summary that, when completed, will give you the overall rating for your shop.

The importance of individual checklist questions is rated using the following scale:

- **"C"** -- **critical**, e.g., has responsibility for MRF management been assigned?
- **"I"** -- **important**, e.g., are machine enclosures maintained in operating condition?
- **"G"** -- **good practice**, e.g., are machines maintained in clean condition?

Only questions that apply to your facility are used to determine the rating. Please see the page “Your Rating” for instructions on figuring out your overall rating.

Regardless of the outcome, the assessment information should be used for improving the MRF management program. Copies of the checklist should be kept available for use in the improvement process.

¹ Consult the “Legal Issues” section of the *ORC Management of the Metal Removal Fluid Environment* (MMRFE) website for limitations on the use of this self-assessment procedure. The MMRFE website can be accessed from <http://www.orc-dc.com>

Self-Assessment Procedure

Metal Removal Fluid System Management

Summary

Plant: _____

Date: _____

Completed by: _____

Instructions: Complete Part I and as many copies of Part II as necessary to evaluate your shop. Transfer the information from the checklists to the sections below and perform the indicated calculations. See the page “Your Rating” to figure out your score and interpret the overall rating.

Part I	Total Score	Rating
Did you answer "no" to any critical (C) question? _____		Pass Marginal Failure
Did you score less than 40% on any section? _____		
For the Important (I) questions from all sections: Total Yes: _____ Total No: _____ Total NA ("I" only) _____ % = Yes/(31 - NA) * 100: _____		
Part II		
Number of checklists completed: _____		Pass Marginal Failure
Did you answer "no" to any critical (C) question? _____		
Is any checklist score less than 40%? _____		
For the Important (I) questions from all of the checklists: % = Yes/(Yes + No) * 100: _____		
Overall Rating		
Did you have a "failure" rating on Part I or II? _____		Pass Marginal Failure
% = (Part I % + Part II %) / 2: _____		

MRF Self-Assessment Procedure

Part I

Instructions: Circle the appropriate answer for the questions below (Y = Yes, N = No, NA = Not Applicable). If "No" is circled, make comments and recommend actions to correct the problem, if possible. Note that NA is not available for some questions. Calculate the scores for the categories as indicated. Transfer the information from this checklist to the summary sheet.

Type: C = Critical, I = Important, G = Good Practice

A. Management Program and Responsibilities		Section Score	Comment
	Type		Corrective Action or Comment
1. Is shop management providing commitment, leadership, and involvement for the shop's overall metal removal fluid (MRF) management program?	C	Y N	
2. Has overall responsibility for MRF management been assigned to an individual?	C	Y N	Responsible Person:
3. Is there a written program specifying procedures for MRF use and management that includes the elements of fluid selection, fluid testing, material management, training, record keeping, delivery system management, and ventilation system management? (There is a one-year grace period from the first assessment.)	C	Y N	
4. Does the written program include goals for the successful management of metal removal fluids?	C	Y N	
5. Does the written program specify responsibilities for the employer, the fluid manager, the maintenance or facilities manager, and the employees? (There may be a grace period; see #3 above.)	C	Y N	
6. Is the MRF management program evaluated periodically as part of a continuous improvement or quality program?	C	Y N	

B. Employee Participation		Section Score	Comment
	Type		Corrective Action or Comment
1. Have employees participated in the design and implementation of the fluid management program? (Skip this question if the program is just being started.)	C	Y N	
2. Do employees participate in the investigation of hazards or complaints?	C	Y N	
3. Are employees required to wear appropriate eye protection for their job functions (e.g., safety glasses, goggles, face shield)?	C	Y N	
4. Is other personal protective equipment specified as appropriate to specific job functions (e.g., gloves, safety shoes, protective clothing, respirators)?	I	Y N NA	

C. Fluid Selection, Testing, and Management		Section Score	Comment
For the "I" (important) questions in this section only: Yes: ___ No: ___ NA: ___ $\% = \text{Yes}/(14\text{-NA}) * 100$ ___			
	Type		Corrective Action or Comment
1. Does the written metal removal fluid management program include procedures for selecting, sampling, testing, and evaluating the fluids?	C	Y N	
2. Does the written program include guidelines for use and safe handling instructions for anti-microbial (biocide) additives for water-miscible MRFs?	C	Y N NA	
3. Are water-miscible MRF systems routinely monitored for MRF concentration, pH, microbial levels, tramp oil, and suspended particulate matter as appropriate?	C	Y N NA	
4. Are the collected data on fluid condition reviewed on a regular basis?	C	Y N	
5. When indicated by the collected data, are corrective actions taken in a timely manner?	C	Y N	

6. Has a metal removal fluid supplier been selected that can provide the products and support needed for a cost-effective and responsible MRF management program?	I	Y N	
7. Are MSDSs reviewed to understand the acute and chronic toxicity potential of MRFs?	I	Y N	
8. Are MRFs selected to minimize components that may be irritating or objectionable (such as some alkanolamines, some short-chain fatty acids, or volatile petroleum products)?	I	Y N	
9. Has the compatibility of the MRFs with machine lubricants, seals, metals, and process cleaners been included in the selection process?	I	Y N	
10. Are fluid system additions controlled by the MRF Coordinator/Manager, recorded on a log sheet, and performed "off-shift," when the plant population is reduced?	I	Y N NA	
11. Are mechanisms in place to minimize tramp oil contamination of the MRF, i.e., record keeping, maintenance systems?	I	Y N NA	
12. Are MRF fluid system cleanouts routinely scheduled?	I	Y N NA	
13. Do system clean-outs follow a standard operating procedure for draining, cleaning, and recharging (DCR) that is contained in the written management program?	I	Y N NA	
14. Are systems thoroughly cleaned (e.g., power washing and rinsing) before being recharged with fresh fluid?	I	Y N NA	
15. Has the effect of the MRFs on the waste treatment system been evaluated?	I	Y N NA	
16. Are all wastes generated by the use of the MRFs disposed of in a proper manner?	I	Y N NA	

D. Information and Training		Section Score	Comment
<p>For the "I" (important) questions in this section only:</p> <p>Yes: _____ No: _____ NA: _____</p> <p>% = Yes/(6 - NA)*100 _____</p>			
	Type		Corrective Action or Comment
1. Does the shop have a hazard communication program to educate workers about hazards in their workplace?	C	Y N	
2. Are employees provided with information that allows them to recognize and understand the potential hazards of MRFs and associated chemicals?	C	Y N	
3. Are employees trained on procedures for the safe use of MRFs and applicable additives used on their job?	C	Y N	
4. Does the written metal removal fluid management program specify the training needs of workers in this environment?	I	Y N	
5. Does the training section of the metal removal fluid management program include procedures to evaluate the effectiveness of the training?	I	Y N	
6. Does the training section of the metal removal fluid management program include provisions for refresher training as appropriate?	G	Y N	
7. Have employees been instructed on how to obtain the MSDSs for the materials they work with?	I	Y N	
8. Are employees trained on physical safety concerns of working in metal removal operations?	I	Y N	
9. Are employees instructed on how to use the metal removal fluids according to the MSDS and other company-specific instructions?	I	Y N	
10. Is there a process to ensure that metal removal fluid containers, including transfer containers, are labeled properly?	I	Y N NA	

E. Investigation of Hazards and Complaints		Section Score	Comment
<p>For the "I" (important) questions in this section only:</p> <p>Yes: _____ No: _____ NA: _____</p> <p>% = Yes/(7 - NA)*100 _____</p>			
	Type		Corrective Action or Comment
1. Does the shop have a program for investigation of hazards related to MRFs?	C	Y N	
2. Does the shop have a program to implement and monitor corrective actions when needed?	C	Y N	
3. Does the shop have a written program for investigation and review of health and safety complaints?	C	Y N	
4. Does the shop have a program for preventative, scheduled, or progressive maintenance of machines, MRF filtration systems, ventilation systems, other support facilities?	C	Y N	
5. Is exposure assessment conducted on a periodic basis to identify workers or work areas with potentially high aerosol exposures?	I	Y N	
6. Where indicated, are quantitative measurements made of the worker exposures to ensure employee exposures to ambient MRF aerosol do not exceed 1.0 mg/m ³ ?	I	Y N NA	
7. Is exposure assessment used to aid in the investigation of worker respiratory complaints?	I	Y N NA	
8. Where employee exposures exceed 1.0 mg/m ³ , are equipment repairs or other corrective actions initiated to reduce exposures?	I	Y N NA	
9. Is new machinery specified and tested to ensure MRF aerosol emissions are as low as practicable in order to further reduce workplace MRF aerosol concentrations?	I	Y N NA	
10. Are employees discouraged from smoking and eating in the workplace?	G	Y N NA	
11. Are metal removal fluids and additives for tank-side additions stored according to specifications?	I	Y N NA	

F. Medical Monitoring, Management, and Surveillance		Section Score	Comment
<p>For the "I" (important) questions in this section only:</p> <p>Yes: _____ No: _____ NA: _____</p> <p>% = Yes/(3 - NA)*100 _____</p>			
	Type		Corrective Action or Comment
<p>1. Does the shop have a medical program or set of procedures to address health concerns in the workplace?</p>	C	Y N	
<p>2. Do employees have an effective way to report health complaints, such as respiratory irritation or dermatitis that may be occupational in origin?</p>	C	Y N	
<p>3. Do employees utilize the shop medical program when appropriate?</p>	I	Y N NA	
<p>4. Does the shop medical program include preassignment evaluation by a licensed health care provider?</p>	I	Y N NA	
<p>5. Does the shop provide for referral to a specialist for necessary follow-up care or a second opinion when appropriate?</p>	I	Y N NA	
<p>6. Does the shop medical program include periodic medical examinations to support occupational health goals?</p>	G	Y N NA	

Additional Comments:

MRF Self-Assessment Procedure

Part II: Individual Departments or Systems

Complete as many copies of this checklist as needed to evaluate each sub-unit of your shop

Plant: _____

Operation: _____

Department: _____

Bay/Column: _____

Date: _____

Completed by: _____

Instructions: Circle the appropriate answer for the questions below (Y = Yes, N = No, NA = Not Applicable). If "No" is circled, make comments and recommend corrective actions if possible. Note that NA is not available for some questions. Calculate scores for each of the six categories as well as for the overall checklist. Transfer results to the Summary Sheet.

Type: C = Critical, I = Important, G = Good Practice

Self Assessment Rating for this Unit		Total Score	Rating
Did you answer "no" to any critical question? _____ Is any section score less than 40%? _____ For the "I" or important questions from all of the sections Total Yes: _____ Total No: _____ Total NA: _____ (I only) $\% = \text{Yes} / (36 - \text{NA}) * 100$			

A. Management Program and Responsibilities		Section Score	Comment
	Type		Corrective Action or Comment
1. Has responsibility for the MRF system in this area been assigned to an individual?	C	Y N	Responsible Person:

B. Employee Participation		Section Score	Comment
For the "I" or important questions in this section only Yes: ____ No: ____ NA: ____ $\% = \text{Yes}/(4 - \text{NA}) * 100$			
	Type		Corrective Action or Comment
1. Are employees wearing the appropriate eye protection for their job function in this area (e.g., safety glasses, goggles)?	I	Y N	
2. Are employees using other personal protective equipment as specified for their job function in the MRF management program (e.g., gloves, safety shoes, protective clothing, and respirators)?	I	Y N NA	
3. Do employees practice good personal hygiene in this area?	I	Y N	
4. Do employees practice good workplace housekeeping in this area?	I	Y N	

C. Fluid Selection, Testing, and Management		Section Score	Comment
For the "I" or important questions in this section only Yes: ____ No: ____ NA: ____ $\% = \text{Yes}/(4 - \text{NA}) * 100$ ____			
	Type		Corrective Action or Comment
1. Has a metal removal fluid and concentration been selected that is appropriate for the operations in this area?	I	Y N	
2. Are the water-miscible MRF systems in this area routinely tested according to the MRF management program?	I	Y N NA	
3. Does the fluid handling system adequately remove "fines" and other debris from the MRF?	I	Y N NA	
4. Are systems thoroughly cleaned (e.g. power washing and rinsing) before recharging with fresh fluid?	I	Y N NA	

D. Information and Training		Section Score	Comment
For the "I" or important questions in this section only Yes: ___ No: ___ NA: ___ $\% = \text{Yes} / (4 - \text{NA}) * 100$ ___			
	Type		Corrective Action or Comment
1. Do employees in this area understand the potential hazards of MRFs and associated chemicals?	C	Y N	
2. Have employees been trained on procedures for the safe use of MRFs and applicable additives used on their job?	C	Y N	
3. Do employees know how to obtain the MSDSs for the materials that they work with?	I	Y N	
4. Have the employees been trained on physical safety concerns of working in metal removal operations?	I	Y N	
5. Are the metal removal fluids currently being used according to the Material Safety Data Sheet and other company specific instructions?	I	Y N	
6. Are metal removal fluid containers labeled properly and are employees using product according to the label?	I	Y N NA	

E. Investigation of Hazards and Complaints		Section Score	Comment
For the "I" or important questions in this section only Yes: ___ No: ___ NA: ___ $\% = \text{Yes} / (22 - \text{NA}) * 100$			
	Type		Corrective Action or Comment
1. Is the preventative, scheduled, or progressive maintenance of machines, MRF filtration systems, ventilation systems, and other support facilities in this area conducted as specified?	I	Y N	
2. Has exposure assessment been conducted in this work area according to the MRF management plan?	I	Y N	

3. Are machine guards in place and in good condition?	I	Y N NA	
4. Is the flow of MRF at each operation interrupted or cycled off when it is not needed for the proper operation of the machine?	I	Y N NA	
5. Is MRF delivered directly to the cutting zone and fluid pressure reduced to the minimum required?	I	Y N NA	
6. Is piping that contains MRF properly labeled?	I	Y N NA	
7. Are coolant sumps covered with solid material or a moderate foam blanket to contain a mist?	G	Y N NA	
8. Are supply air diffusers and supply air ductwork in good condition and operating properly?	I	Y N NA	
9. Is adequate supply air provided for general ventilation and process exhaust?	I	Y N NA	
10. Is filtration provided for recirculated general ventilation air?	I	Y N NA	
11. Where necessary, are there provisions for mist containment at each machining station and does it adequately capture MRF aerosol?	I	Y N NA	
12. Are local exhaust ventilation enclosures and hoods in good condition?	I	Y N NA	
13. Are man-cooling fans, if present, placed or directed so as not to interfere with the exhaust ventilation?	I	Y N NA	
14. Do mist collectors and ductwork meet the requirements of ANSI B11 TR2-1997 and are they free of any visible emissions and in good condition?	I	Y N NA	
15. Are mist collectors exhausted from the building?	G	Y N NA	
16. Is there a reliable method to monitor the mist collector performance, e.g., pressure drop across an appropriate element of the system?	G	Y N NA	

17. Is a record of the mist collector maintenance and performance history (e.g., filter changes and pressure drop readings) attached to the collectors?	G	Y N NA	
18. If “Floor Dry” or absorbent socks are used around machines to control continuous leaks or splashing, have work orders been submitted for repairs?	I	Y N NA	
19. Are building structures (e.g., trusses, columns or pipes) free of dripping MRF?	I	Y N NA	
20. Are walking surfaces free of metal removal fluids or other machine fluids (e.g. hydraulic oil) that may be potential slip hazard?	I	Y N NA	
21. Are adequate facilities available for the personal hygiene of the workers and are they stocked with appropriate hand cleaning supplies?	I	Y N NA	
22. Do employees refrain from smoking and eating in this area?	G	Y N	
23. Are drip pans, trenches and the surrounding floor free of cigarette butts, cups or other trash?	G	Y N	
24. Are machine interiors, exteriors and the surrounding floor free of chip accumulations that can interfere with proper MRF circulation?	I	Y N NA	
25. Are metal removal fluid containers being stored according to specification?	I	Y N NA	
26. Are drip pans and other fluid reservoirs in good condition and cleaned regularly to avoid stagnation?	I	Y N NA	
27. Are MRF and oil spills or leaks cleaned up promptly?	I	Y N NA	
28. Are machines washed down and cleaned regularly to prevent stagnation of MRFs?	I	Y N NA	

F. Medical Monitoring, Management, and Surveillance		Section Score	Comment
	Type		Corrective Action or Comment
1. Do employees know how to report health complaints, such as respiratory irritation or dermatitis that may be occupational in origin?	C	Y N	
2. Are the workers in the area free of signs of MRF related dermatitis?	I	Y N	
3. Have the workers in the area been free of MRF related respiratory complaints since the last self-assessment?	I	Y N	

Additional Comments:

Your Rating

Your rating is calculated as follows:

1. For both **Part I** and **Part II** of the checklist, a "no" answer to any of the **critical (C)** questions results in a **failing** assessment, except that a one-year grace period from the first self-assessment is granted so that the written management program can be developed.
2. For **Part I** of the checklist, rating is arrived at as follows:
 - A. A **failing** assessment is given if
 - fewer than 50% of the **I (Important)** questions are answered "yes"
 - any of the six *sections* of Part I receives less than a 40% score
 - B. A **marginal** assessment is made if
 - 50% to 75% of the **I** questions are answered "yes" AND
 - each *section* of questions receives a minimum score of 40%.
 - C. A **passing** assessment requires that
 - 75% of the **I** questions are answered "yes" AND
 - each *section* of questions receives a minimum score of 40%
3. For "**I**" (**Important**) questions on **Part II** of the checklist, a minimum of 40% is required as the overall score of **each** department, system, or process. (There is no requirement, however, that each *section* of Part II receive 40%.)
4. The **G (Good Practice)** questions are not used in determining the final rating. However, they are indicators of the quality of the overall management program.
5. While an overall percentage is calculated to aid in the continuous improvement process, the **Overall Rating** is the minimum rating received on Part I or Part II.