RESPIRATOR FILTER AND CARTRIDGE CHANGE OUT SCHEDULE

All air-purifying respirators used for protection against gases and vapors must have an end-of-service-life indicator or have a cartridge change schedule that is based on objective information or data to ensure that canisters or cartridges are changed before the end of their service life.

The following change schedule is determined based on regulatory standards, manufacturer's recommendations, and the ACGIH "Rule of Thumb".

A. Filter Change Out Schedules

The service life of all filter is limited by considerations of hygiene, damage, and breathing resistance. All filters should be replaced whenever they are damaged, soiled, or causing noticeably increased breathing resistance.

Filter Series	Recommended Change Schedule
N	When breathing becomes difficult, or when breakthrough odor or taste is detected
R	After each 8-hour shift or 8 hours of use
P	Follow manufacturer's time-use recommendation

B. Cartridge Change Schedules

There are substance-specific regulatory standards that are considered prudent practices that provide mandatory change out schedules. Respirator Users exposed to any of the following contaminants at or above the Permissible Exposure Limit (PEL) must change cartridge/canisters according the table provided below:

Contaminant	Mandatory Cartridge Change Rules
Acrylonitrile	End of service life or end of shift
Benzene	End of service life or end of shift
Butadiene	Every 1, 2 or 4 hours based on concentration and at the beginning of each shift
Formaldehyde	Cartridges every 3 hours or end of shift; canisters every 2 to 4 hours.
Vinyl Chloride	End of service life or end of shift in which they are first used.
Methylene Chloride	Canisters for emergency escape only, replace after use.

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Respirator Users not included in the above substance-specific requirements must change their cartridges/canisters according Environmental Health & Safety's recommendations for their worksite. For conservative purposes, respirator users should change their cartridges every 8 hours of exposure of at the end of every work shift.

Since hazards and their concentrations continuously vary at Mississippi State University, EH&S has determined change schedules based on manufacturers and regulatory agencies' recommendations. Regulatory agencies have provided "Recognized Rules of Thumb" that one can utilize to determine the end-of-service-life of cartridges and canisters:

- If the chemical's boiling point is >70°C (158°F) and the concentration is less than 200 ppm, one can expect a service life of 8 hours at a normal work rate.
- Service life is inversely proportional to work rate.
- Reducing concentration by a factor of 10 will increase the service life by a factor of 5.
- Humidity above 85% will reduce service life by 50%.

Factors that reduce cartridge service life:

- Exertion level (work rate)
- Cartridge variability (charcoal content, characteristics)
- Temperature
- Humidity
- Multiple Contaminants