

Recycling of End-of-Life Vehicles (ELVs)- An Overview

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Introduction

- End-of- Life Vehicle (ELV) is a motor vehicle that has come to the end-of-life due to wear and tear or due to unnatural reasons such as an accident, fire, flood etc.
- ELVs contain large quantities of metal and other materials that, if salvaged or recycled properly can be effectively fed back into the economy.
- The management of ELVs includes collection, handling, transportation, storage, processing and channelizing materials or waste generated during processing to appropriate recycling or waste disposal facilities.

Regulations on End-of-Life Vehicles (ELVs)

- Scrapping and recycling activities of ELV are regulated under
 - Water (Prevention & Control of Pollution) Act, 1974;
 - Air (Prevention and Control of Pollution) Act, 1981 ;
 - Environment (Protection) Act, 1986 and the rules made there-under.

- Scrapping and recycling facility of ELVs has been categorized under “**Orange**” based on pollution potential in terms of emission and disposal method.

- Rules under Environment (Protection) Act 1986 having relevant provisions for regulatory framework applicable for ELVs
 - The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.
 - The Solid Waste Management Rules, 2016.
 - The E-Waste Management Rules, 2016.
 - The Plastic Waste Management Rules, 2016.
 - The Ozone Depleting Substances (Regulation and Control) Rules, 2000

Regulations on End-of-Life Vehicles (ELVs)

To promote use of secondary material for resource recovery/ conservation; formalize the unorganized sector to practice environmentally sound operations, various policy/ guidelines have been formulated:

- Guidelines for Environmentally Sound Facilities for Handling, Processing and Recycling of End-of- Life Vehicles (ELV)- *CPCB*
- Steel Scrap Recycling Policy- *Ministry of Steel*
- Guidelines for Scrapping of Motor Vehicles in Delhi- *Transport Department, Delhi*
- Motor Vehicles (Registration and Functions of Vehicle Scrapping Facility) Rules, 2021- *Ministry of Road Transport and Highways*

Guidelines for Environmentally Sound Facilities for Handling, Processing and Recycling of ELVs

The guidelines outline:

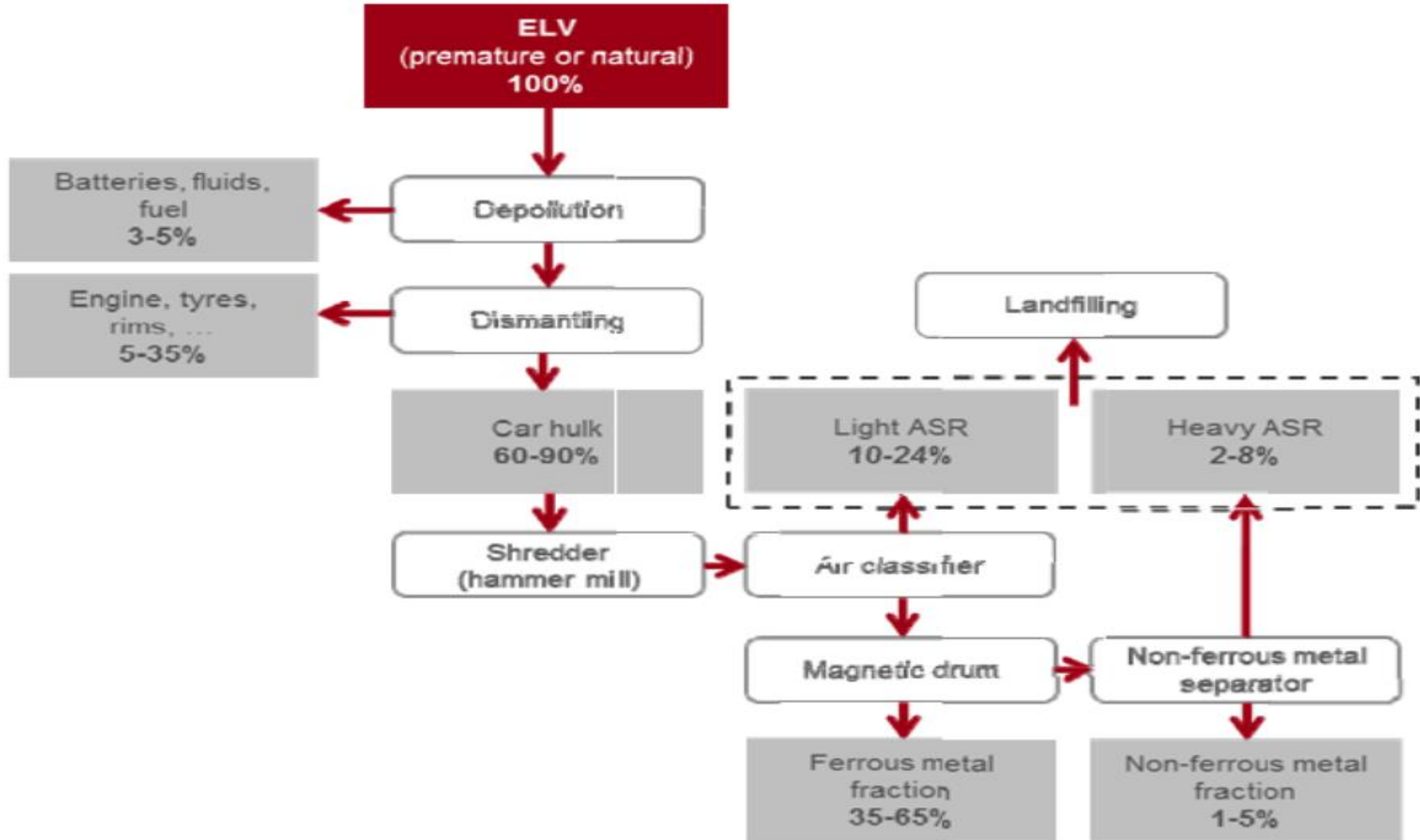
- Handling, storage and transportation
- Environmentally sound de-pollution
- Environmentally sound dismantling and segregation
- Environmentally sound shredding and separation and processing of residues
- Technologies for the ELV recycling process
- Requirements for setting up of ELV recycling facility
- Management of various wastes generated during de-pollution, dismantling and shredding of ELVs

Salient Features of the Guidelines....

ELV management involves environmentally sound:

- **De-pollution**- which includes removing hazardous components and substances such as the battery, fuel, other fluids, airbags and any parts containing mercury
- **Dismantling**-process involves segregating and collecting recyclable and reusable components, including engines, tyres, bumpers, and other parts,
- **Shredding**- Automotive Shredded Residue (ASR) is a highly heterogeneous mixture of residual ferrous and non-ferrous metals (5–23%), plastics (20–49%), rubber (3–38%), textile and fibre material (4–45%), wood (2–5%), and glass (2–18%)
- **material recovery and**
- **disposal of residues**

Typical ELV processing



Salient Features of the Guidelines....

➤ **Collection and handling of ELVs**

- Need to develop a collection and channelization mechanism for ELVs from the source of its generation for recycling and recovery in an environmentally sound manner
- Shall fulfill the criteria of an adequate area of coverage for collection.
- It is advisable to consider a 50 km radius around a take back facility.

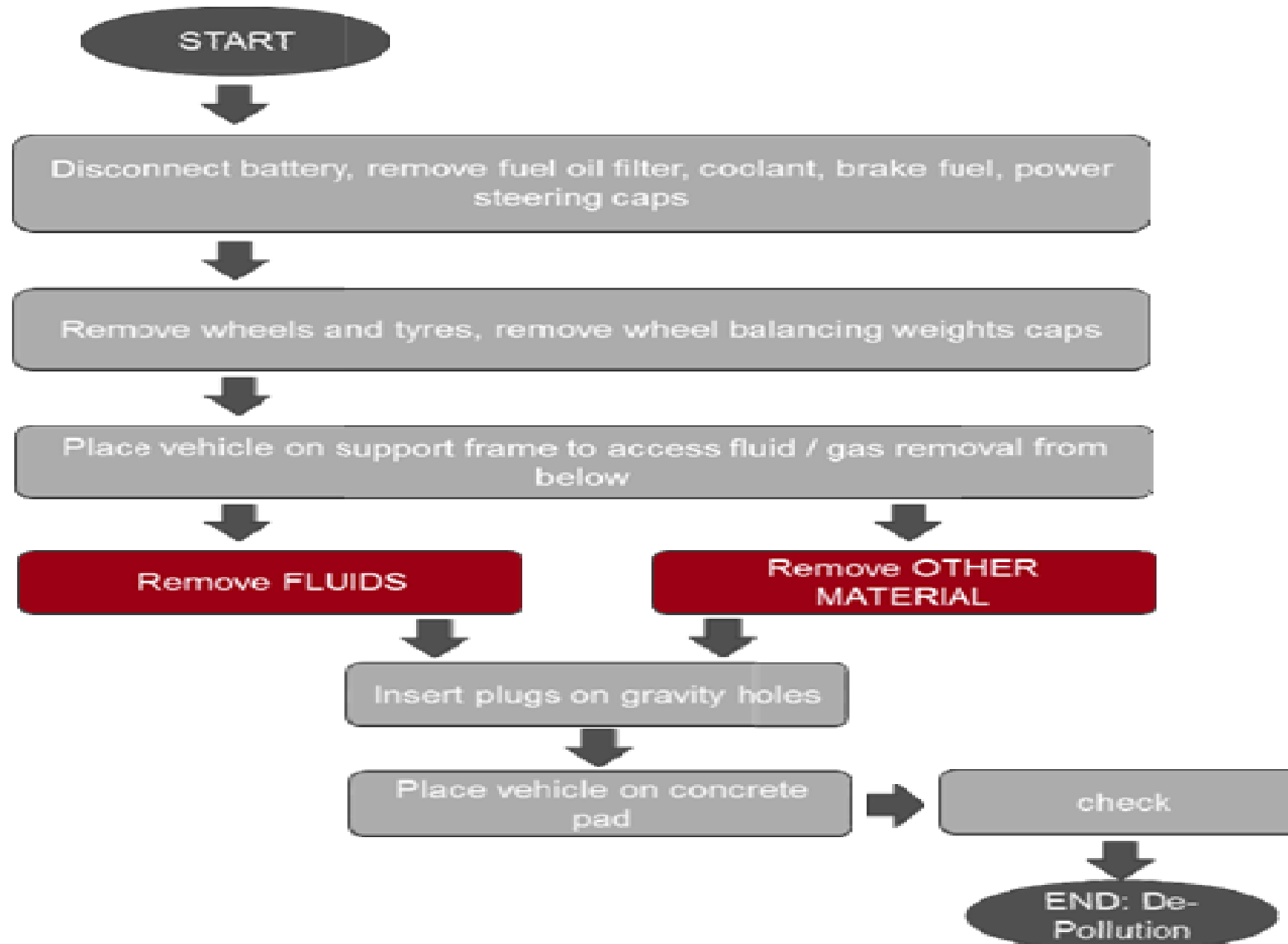
➤ **Handling, storage and transportation of ELVs**

- At the Collection and Dismantling Centers facilities, cranes / lifting equipment will be required to move ELVs within the unit.
- Stored in a way that protects their value and protects the surrounding environment.
- Stored in dry areas where there is no water logging or water will not be flowing under the vehicle during rain or snow melt periods.
- Stored on impermeable surfaces, such as concrete or other feasible ground sealing with provisions for spillage collection, decanting and degreasing;
- Shall not be stored along or over property boundaries, public rights-of-way, or easements.

Storage of ELVs

- ELVs shall not be stored until the fuel, oil, antifreeze, and other fluids are completely drained, and the fuel tank, radiator, and other fluid containing parts have been removed.
- An ELV shall not be stored without removing the battery.
- Appropriate storage for dismantled spare parts, including impermeable storage for oil-contaminated spare parts,
- Appropriate containers for storage of batteries (with electrolyte neutralization on site or elsewhere), and filters/ PCB/PCT-containing condensers (if applicable),
- Appropriate storage tanks for the segregated storage of End-of-Life Vehicle fluids: fuel, motor oil, gearbox oil, transmission oil, hydraulic oil, cooling liquids, antifreeze, brake fluids, air-conditioning system fluids and any other fluid contained in the End-of-Life Vehicle,
- Appropriate storage for used tyres, including the prevention of fire hazards and excessive stockpiling.
- An inventory of the ELVs shall be maintained with detailed record of the make, model, and year of each vehicle, the date the vehicle arrived.

De-pollution process



De-pollution process

Operation	De-pollution Sequence
A. Before Lifting the vehicle	
Remove Battery	A
Remove fuel filter cap & oil filler	A
Set heater to maximum	A
Remove wheels and tyres and separate balance weights	A
Remove any parts identified as containing mercury	A
B. Lift the vehicle on de-pollution frame or lifting device	
Degas air conditioning unit (if fitted)	A
Drain engine oil and remove oil filter for crushing or disposal	B
Drain transmission oil, including rear differential	B
Drain coolant	B
Drain brake fluid	B
Remove catalyst (if fitted)	B
Drain washer bottle	A
Drain brake/clutch reservoir(s)	A
Drain power steering reservoir (if fitted)	A
Drain fuel tank	B
Drain shock absorbers or remove suspension fluid	B
Replace drain plugs/fit plastic stoppers	B
C. Remove vehicle from de-pollution frame or lifting device	
Deploy airbags and other pyrotechnics in-situ (if fitted and able to conduct this operation)	A
Remove air bags and other pyrotechnics (if fitted, and cannot be deployed in-situ)	A

Dismantling

- Once the vehicle has been de-polluted it is then dismantled.
- This process involves segregating and collecting recyclable and reusable components, including engines, tyres, bumpers, and other parts.
- The dismantling process could be manual or mechanical depending upon the type, size of the vehicle and numbers being handled.
- Small vehicles can be easily dismantled and manual dismantling is preferred.
- The larger vehicles that are not easy to handle manually can be dismantled using machines or are subject to mechanical dismantling

➤ **Shredding and separation and processing of residues**

- After de-pollution and dismantling of ELV, the remaining structure of ELV i.e. hulk shall be shredded in the shredder.
- Such shredding facility may be installed at the premise where de-pollution and dismantling activities are carried out or the hulk may be sent to a common shredding facility.
- Residue of Shredded ELV consists of four fractions:
 - i. ferrous metals (using magnetic separation),
 - ii. nonferrous metals (using mechanical separation),
 - iii. heavy shredder residue and
 - iv. light fraction.

➤ **Technologies for the ELV recycling process:**

- de-pollution frame or lifting device
- Pneumatic tools and electrical screwdrivers
- suction air streams
- Air classifiers, cyclone separators
- Magnetic separators
- Eddy-current separators
- Heavy media separation
- Thermal treatment

➤ **Management of various wastes generated during de-pollution, dismantling and shredding of ELVs**

Wastes generated during environmentally sound recycling process of ELVs shall be managed in accordance with the various Rules notified by the Ministry of Environment, Forests and Climate Change under the Environment (Protection) Act, 1986.

The applicable Rules are:

- [Hazardous & Other wastes \(Management and Transboundary Movement\) Rules 2016](#)
Used Oil, Waste Oil, Transmission oil, brake fluid, coolant fluid, lead acid batteries, brake shoe, clutch plates, ASR, etc
- Ozone Depleting Substances (Regulation and Control Rules), 2000
Refrigerant gases used in vehicle air conditioning systems
- E-Waste Management Rules, 2016
Air conditioners, display unit, circuit board, music system, etc.
- Solid Waste Management Rules, 2016
- Plastic Waste Management Rules, 2016

Guidelines for Scrapping of Motor Vehicles in Delhi, 2018

- This guidelines are applicable in NCT of Delhi.
- Said guidelines covers:
 - ✓ definitions;
 - ✓ conditions of eligibility for grant of authorization;
 - ✓ licensing procedure;
 - ✓ validity and renewal of license;
 - ✓ right to inspection of authorized scrapping facility;
 - ✓ scrapping procedures;
 - ✓ installation of CCTV;
 - ✓ scrapping yard (specifying minimum area for such yard);
 - ✓ scrapping procedure for impounded and abandoned vehicles;
 - ✓ applicable act/rules (covers 10 rules/act);
 - ✓ penalty and
 - ✓ appeal.

Steel Scrap Recycling Policy

- Provide framework for carrying out the ferrous scrap segregation, collection, processing and recycling activities in a scientific manner to have regular supply of processed scrap for the downstream industry.
- Ensure that quality scrap is available for the steel industry from end of life products (that includes white goods and other scrap apart from ELVs).
- The objective of the policy is to:
 - ✓ promote circular economy in the steel sector
 - ✓ promote a formal and scientific collection, dismantling and processing activities for end of life products
 - ✓ processing and recycling of products in an organized, safe and environment friendly manner
 - ✓ promote 6Rs principles of Reduce, Reuse, Recycle, Recover, Redesign and Remanufacture
- Policy also outlines guidelines with regard to dismantling/collection center and scrap processing; authorization; evolving a responsive ecosystem with all stakeholder & role of each stakeholders

The “Vehicle Scrapping Policy” Proposed by MORTH

- In order to promote voluntary vehicle scrapping, the government of India has announced the Vehicle Scrapping Policy (given by Ministry of Road, Transport and Highway, MORTH).
- Salient features :
 - Commercial vehicles be de-registered after 15 years in case of failure to get the fitness certificate.
 - As a disincentive measure, increased fees for fitness certificate and fitness test may be applicable for commercial vehicles 15 year onwards from the date of initial registration.
 - Private Vehicles be de-registered after 20 years if found unfit or in case of a failure to renew registration certificate.
 - As a disincentive measure, increased re-registration fees will be applicable for private vehicles 15 year onwards from the date of initial registration.
 - Setting up of Automated Fitness Centres on a PPP model by state government, private sector, automobile companies etc.
 - Setting up of Registered Vehicle Scrapping Facility (RVSF) across India and will encourage public and private participation for opening up of such centres.

The scheme shall provide incentives to owners of old vehicles to scrap old and unfit vehicles through registered scrapping centres, which shall provide the owners with a scrapping certificate.

Some of these incentives include:

- Scrap Value for the old vehicle (approx. 4-6% of ex-showroom price of a new vehicle) be given by the scrapping centre.
- The state governments may be advised to offer a road- tax rebate of up to 25% for personal vehicles and up to 15% for commercial vehicles.
- The vehicle manufacturers are also advised for providing a discount of 5% on purchase of new vehicle against the scrapping certificate.
- The registration fees may also be waived for purchase of new vehicle against the scrapping certificate.

Successful implementation of the said policy will lead to effective recovery of waste from the old vehicles and improve fuel efficiency, thus leading to reduction in air pollution.

Tentative timeline for application of Proposed Scrapping Policy is as follows:

- Rules for Fitness Tests and Scrapping Centres: 01st October 2021
- Scrapping of Government and PSU vehicles above 15 years of age: 01st April 2022
- Mandatory Fitness Testing for Heavy Comm. Vehicles: 01st April 2023
- Mandatory Fitness-Testing (Phased manner for other categories): 01st June 2024

Salient Points of Motor Vehicles (Registration and Functions of Vehicle Scrapping Facility) Rules, 2021

- Applicable for
 - All vehicles and their last registered owners,
 - Automobile collection centres,
 - Automotive Dismantling, Scrapping and Recycling Facilities and
 - Recyclers of all types of automotive waste products.
- End of Life - Vehicles (ELV)” refers to all vehicles which are no longer validly registered; or declared unfit through Automated Fitness Centres; or their registrations have been cancelled under Chapter IV of the Act; or due to an order of a Court of Law; or are self-declared by the legitimate registered owner as a waste vehicle due to any circumstances that may arise from fire, damage, natural disaster, riots or accident etc.

Rule 4: Powers and obligations of RVSF

- Must have necessary cyber security certifications
- Shall be provided connectivity and access to the VAHAN database of vehicle registration
- Shall undertake verification of the persons handing over the vehicle for scrapping
- Retain a copy of the same for record for a minimum period of 6 months.

Rule 5: Conditions of Eligibility for RVSF

- The RVSF may be owned and operated by any legal entity, be it a person, firm, society or trust established in accordance with the applicable laws.
- The entity must possess Certificate of Incorporation, Valid GST registration and Valid PAN.
- The entity must hold an approval for Consent to Establish from the competent authority of the State/UT Government and should possess, or provide an undertaking to obtain, a Consent to Operate from SPCB/PCC within a period of 06 months from commencement of operations
- The entity should have competent manpower and appropriate equipment shall meet the minimum technical requirement for collection and dismantling centres as per CPCB Guidelines.
- Shall provide evidence of availability of an adequate useable area of land in the Orange category industrial zone of the State/UT
- Should provide approved plant layout and the building plan.

Rule 6: Registration Procedure for RVSF

- An applicant may make an application in the prescribed Form-1.
- A Processing Fee of Rs. 1,00,000/- (Rupees One Lakh only) and an Earnest Money Deposit by way of a bank guarantee of Rs. 10,00,000/- (Rupees Ten Lakhs) in favour of designated Registration Authority.

- All applications for grant of registration are to be disposed of by the Registration Authority within a period of 60 days from the date of application and accepted applications are to be issued a Registration Certificate, whereas, the Earnest Money/Bank Guarantee (except processing fee) are to be refunded in case of rejected applications.
- Development of a portal for effective registration and approval process.

Rule 7: Validity and renewal of Registration

- Shall be valid for an initial period of 10 years, which shall be renewable for another 10 years at a time.
- The application of renewal shall carry such renewal fee and security deposit as may be specified by the State or Union Territory Government for this purpose.
- The registration issued under this rule shall not be transferable.

Rule 8: Criteria for Scrapping of Vehicles

- Vehicles which have not renewed their Certificate of Registration in accordance with Rule 52 of the CMVR, 1989.
- Vehicles which have not been granted a certificate of fitness in accordance with Section 62 of the Motor Vehicles Act, 1988.
- Damaged vehicles or Vehicles that have been declared obsolete or surplus or beyond economic repair by the Central/State Organizations of the government.
- Auctioned, impounded and abandoned vehicles by any Enforcement Agency.

Rule 9: Right to Inspection

- The records regarding the transaction of vehicles and scrap generation and its responsible disposal to authorized recyclers, and all the machinery, equipment and apparatus in the RVSF premises should be kept ready by facility for inspection by the Registration Authority or Designated Officer of the State/UT Government.
- Physical Inspection and Site visits should only be carried out in case of non-compliances reported by appropriate authority to the Registration Authority.
- Such complaint has to be forwarded to the Registered Scrapper to file a written response within 3 working days and facility shall further be provided 3 working days to provide clarifications.
- The Registration Authority may after providing an opportunity to the Registered Scrapper of being heard, pass a speaking order to cancel or suspend the authorization for the facility.
- The violations shall also be reported to concerned SPCB/PCCs.

Rule 10: Scrapping Procedure

- The scrapping of vehicles shall be carried as per the procedure described in the notification and shall be carried out by a Registered Scrapper in respect of all ELVs.

Rule 11: Certificate of Vehicle Scrapping

- The Registered Scrapper, after completing the necessary treatment, will issue a Digital “Certificate of Vehicle Scrapping”, including a digital photograph of the cut out of the Chassis, in Form-4 to update the National Register, VAHAN Database and inform the competent authority of the State or Union Territory Government for updating of records.

Rule 12: Installation of CCTV Cameras

- Shall install CCTV cameras at the scrapping yard, in the customer and vehicle reception area
- Access may be provided to the authorized agencies as may be decided by the State/UT Government.

Rule 13: Scrapping Yard

- In view of the large size and voluminous nature of the scraps to be handled, the dismantling facility should be set up in a large area having adequate space for vehicular movement, as well as storage for the Vehicles/products received and recyclable material recovered.
- Adequate collection, de-pollution and dismantling facility should be ensured.
- The collection centres shall comply with relevant health and safety legislation/regulation and environmental norms as laid down by MoEF&CC, CPCB/SPCB for such operations and Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016.
- Should preferably accredit their centres/units with the latest version of quality standards viz. ISO 9001 (Quality management system), ISO14001 (Environmental Management System) and ISO 45001 (Occupational health and safety) within 12 months of commencement of operations.

Rule 14: Applicable Act /Rules

- i. The Motor Vehicle Act, 1988.
- ii. The Central Motor Vehicles Rules, 1989.
- iii. Various State and UT Motor Vehicles Rules, 1993
- iv. The Hazardous Waste (Management, Handling and Transboundary movement) Rules, 2008 as amended from time to time.
- v. The Ozone Depleting Substances (Regulation and Control) Rules, 2000.
- vi. The Batteries (Management and handling) Rules, 2011 as amended in 2016.
- vii. The Plastic Waste (Management and Handling) Rules, 2011 as amended in 2016.
- viii. The E-waste (Management and Handling) Rules 2016

Rule 15: Audits and Certifications

- The RVSF will be audited by the competent authority for compliance, however, On behalf of the competent authority, any of the agencies specified under Rule 126 of the CMVR from time to time, may undertake Regulatory and Compliance Audit.
- Audit of the Mass Flow Statement filed in the Annual Returns by the RVSF as may be notified by the State or Union Territory Government
- Audit Report shall be uploaded on the VAHAN portal by the Audit agency annually for a financial year or part thereof and shall be submitted by 31st May (within two months of completion of financial year) of that financial year.

Rule 15: Appeals

- Any person aggrieved by an order of the Registration Authority of the State or Union Territory Government for forfeiture of security or issuance of cancellation of the registration, may within thirty days of the date of receipt of such order appeal to the designated authority of the State or Union Territory Government or the Commissioner/Secretary (Transport).
- Appeal shall be setting forth the grounds of objections to the order of the Registration Authority and shall be accompanied by a certified copy of the order appealed against and fee of Rs 10,000/- (Rupees Ten Thousand only).
- Designated Authority to dispose the appeal within 14 working days of its rendition.

Status of Implementation of ELV guidelines 2019

1. The CPCB guidelines have been forwarded to all SPCBs/PCCs for implementation.
2. SPCBs/PCCs have also been asked to:
 - ensure compliance of the guidelines and provide details on unauthorized/authorized dismantling and recycling areas/centres of ELVs operating in their state alongwith status of compliance of CPCB guidelines.
 - provide fate of management of ELVs (i.e. collection, channelization, dismantling, de-polluting & shredding of ELVs) generated in their State/UT in case no authorized/unauthorized dismantling and recycling facility exist in the state.

Contd...

Status

3. So far, 06 SPCBs/PCC namely Chandigarh, Mizoram, Madhya Pradesh, Sikkim, Tripura and Telangana have informed that there is no dismantling and recycling facility in their State/UT.
4. Transport Dept., Govt. of NCT Delhi, has directed that cases of de-registration of ELVs should only be entertained with the letter of Authorised Scrapper authorised by the Dept.
5. CERO, a joint venture between Mahindra Accelo and MSTC (a Government of India enterprise under the Ministry of Steel), is operating since 2018 at Greater Noida.

Other 03 authorised scrappers are 02 in Sonipat (Haryana) and 01 in Sikandarabad (UP)

Issues /Challenges

- Most of the recycling/ dismantling of ELVs are carried out by unorganized sector.
- Non-availability of shredding facility in India to achieve good quality scrap/material.
- No Inventorization of ELVs generated and managed.
- Lack of public awareness

Way forward

- Incentive to un-organized sector for putting the such recycling/dismantling activity in organized environmentally sound manner.
- Inventorization of ELVs in phase manner and assessment of current practices followed.
- Installation of Common shredding facility to achieve better quality of scrap/material.
- Creating public awareness thorough workshops and seminar for various stakeholder.

THANK YOU