Progress and Effect of Management on Hazardous Substances and Recycling Ratio of China's Automobile Products

China automobile Technology and Research Center Co., Ltd.

April 2018 Stuttgart

数据资源中心
Automotive Data Center

1.Introduction to China Automobile Technology and Research Center Co., Ltd.

■ PROFILE

Established in 1985, China Automotive Technology & Research Center Co., Ltd. (CATARC) is a central government-level enterprise operating under SASAC (State-owned Assets Supervision and Administration Commission of the State Council) and a comprehensive science and technology corporate group with extensive influence in the automotive industry home and abroad.

1.Introduction of China automobile Technology and Research Center Co., Ltd.

HISTORY

December 1983

- The National Science Commission permitted the establishment of CATARC

25 May 1985

- CATARC was established in Tianjin

1985-1994

- CATARC belonged to the General Corporation of China Automotive Industry

May 1994

- The Ministry of Machinery Industry became the superior authority of CATARC due to the political reform

July 1999

- CATARC became an affiliate of the General Corporation of China Automotive Industry due to the national science research institute reform

August 2003

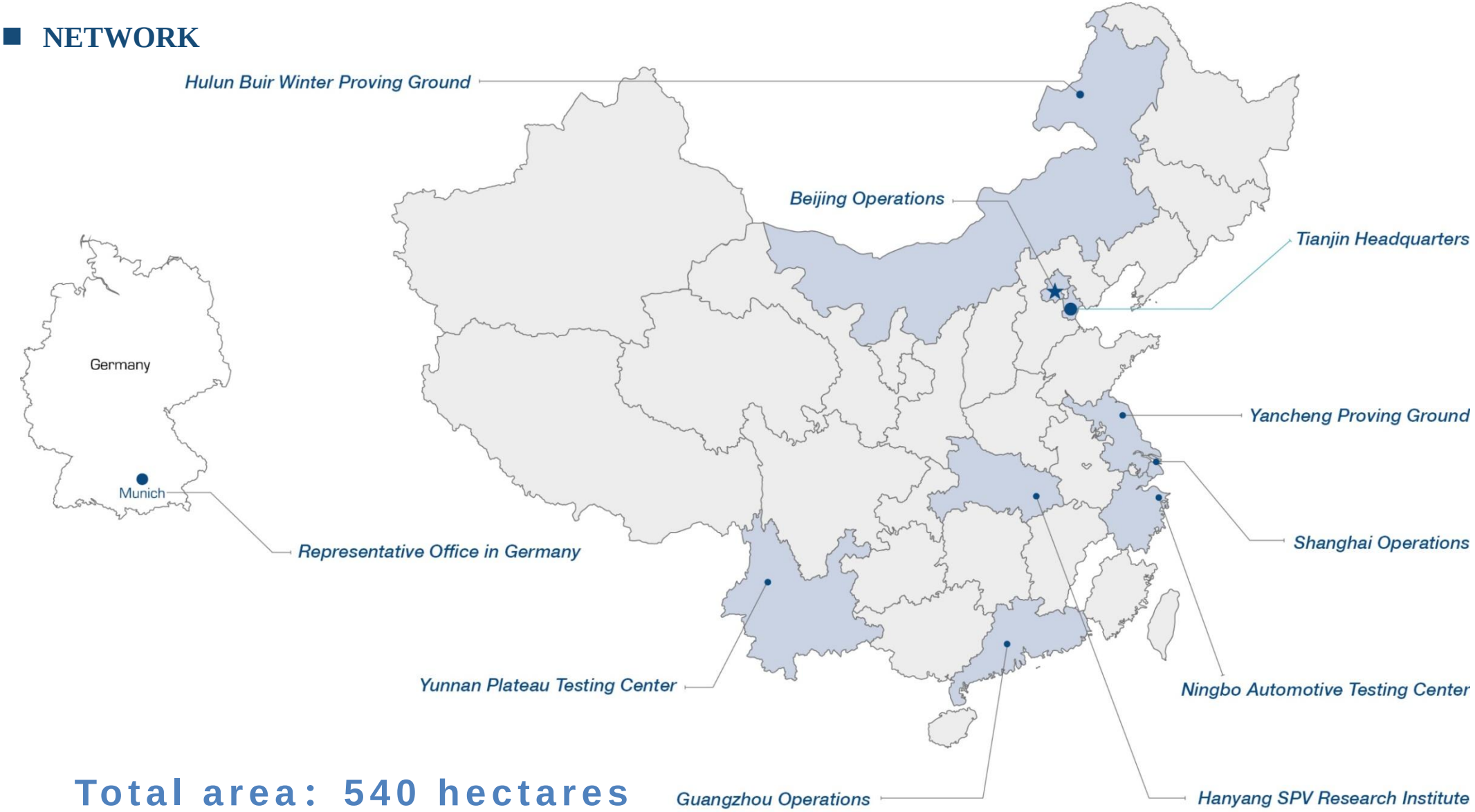
- SASAC became the superior authority of CATARC

February 2018

- CATARC was shifted from an enterprise owned by the whole people to a limited liability corporation (solely funded by the central government)

1.Introduction of China automobile Technology and Research Center Co., Ltd.

■ NETWORK



Total area: 540 hectares

1.Introduction of China automobile Technology and Research Center Co., Ltd.

MAIN BUSINESS

- Management for and Support to the Government
- Policy Research
- Standards and Regulations
- Testing and Inspection
- Certification
- China New Car Assessment Program（C-NCAP）
- China Eco-Car Assessment Program（C-ECAP）
- China Automotive Consumer Research and Testing Center（CCRT）
- Electric Vehicle Test（EV-TEST）
- Engineering Technology R&D
- Big Data
- ……

- Since 2012, CATARC has been commissioned by MIIT to carry out the research on the management system of hazardous substances and recycling of automobile products and the improvement of the management system and so on, so as to promote the green development of the automobile industry.

Content

1 Requirements of China's ELV Regulations

1.Requirements of China's ELV Regulations

- In June 2015, MIIT officially issued the *Management Regulation of Automobile Hazardous Substances and Recoverability Ratio*, which clearly stipulated that from January 1, 2016, management of the use and recycling ratio of hazardous substances for passenger vehicles (M1) with a total seating capacity of not more than nine seats has been initiated.

Source control → **Specific measures** → **Back-end guide**

◆ Automobile Manufacturers

Green supply chain

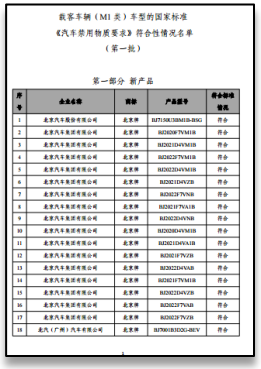
Ecological design

◆ All levels of suppliers

Submit material data

- ✓ Bring into the management of the *Vehicle Production Enterprise and Product Announcement*
- ✓ Declare announcement and submit the *Automobile Hazardous Substances Information Table* at the same time
- ✓ Issue the *Vehicle Disassembly Instruction Manual* within 6 months of Announcement

Issue a list of compliance situation



Issue the *Annual Report on Green Development of Automobile Industry*

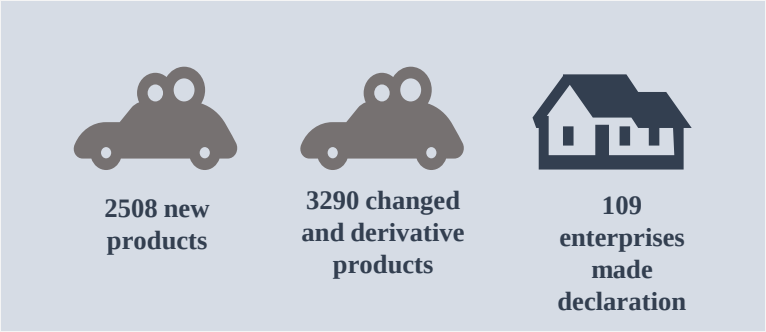
- At present, ELV management mechanism of "Enterprise declaration + Data compliance verification + Results announcement" has been established.

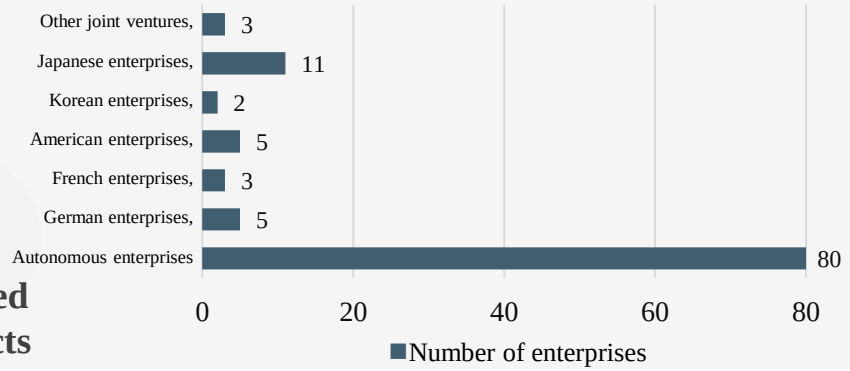
2 Progress and Achievements of ELV Management

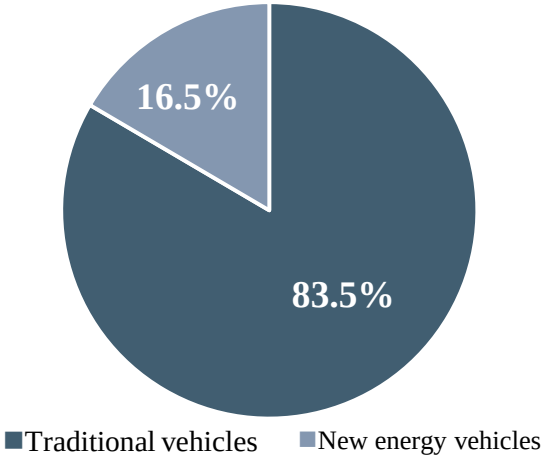
2.Progress and Achievements of ELV Management

1. Situation of management and control of vehicle models

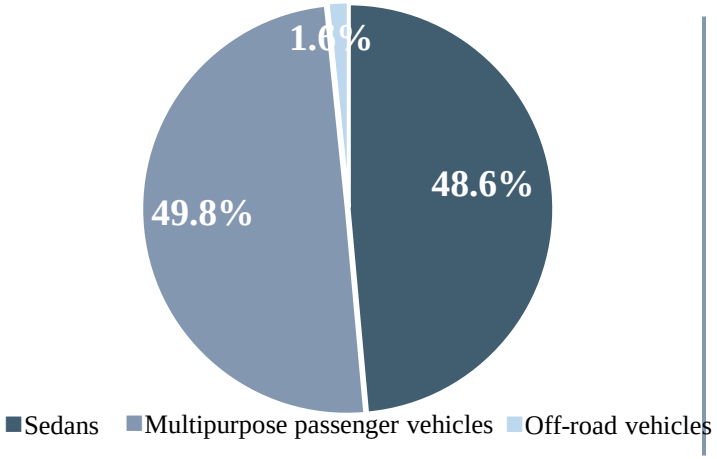
- **By the end of 2017, management of new products ELV involved 109 car manufacturers, 2508 new products and 3290 changed and derivative products.**
- **From January 1, 2018, ELV management of in-production vehicles has been initiated, involving 2563 models.**



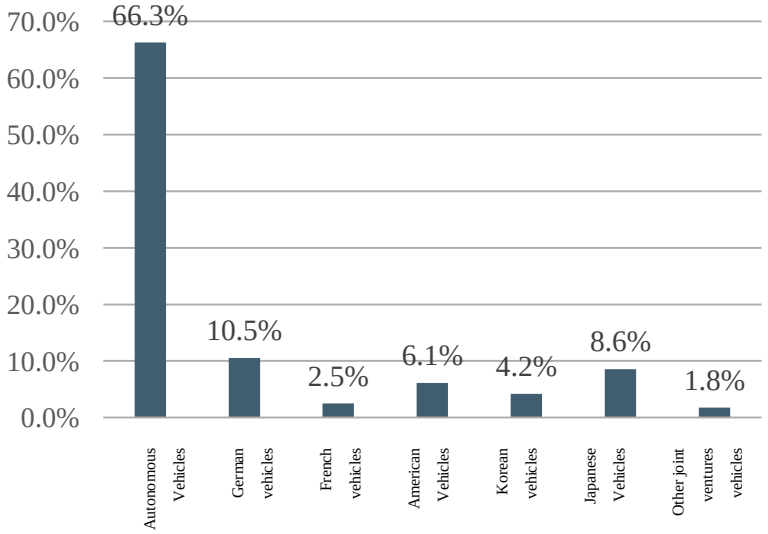




New products



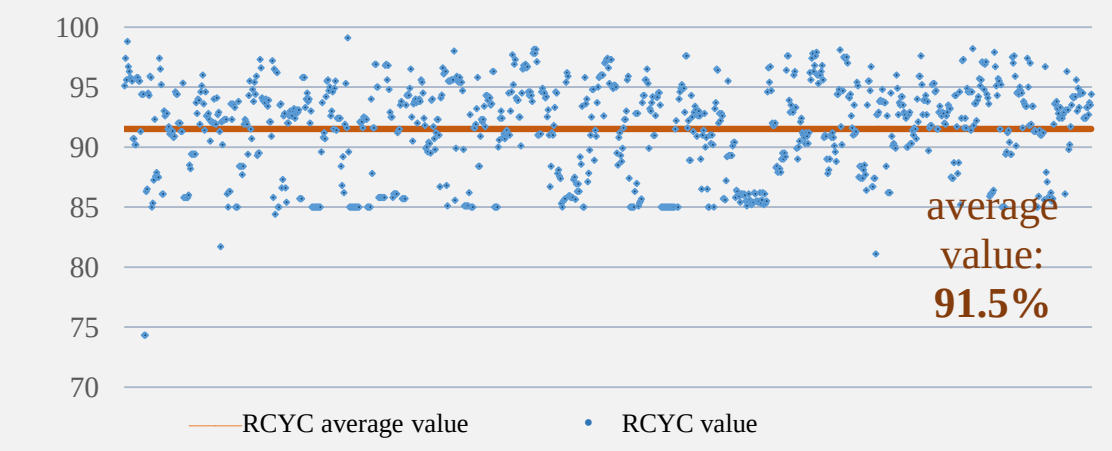
New products

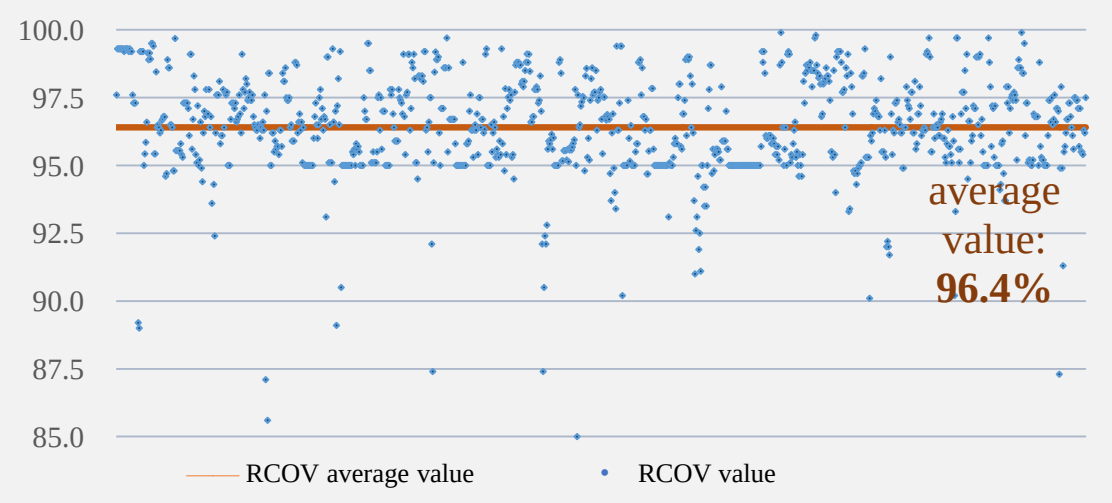


2. Progress and Achievements of ELV Management

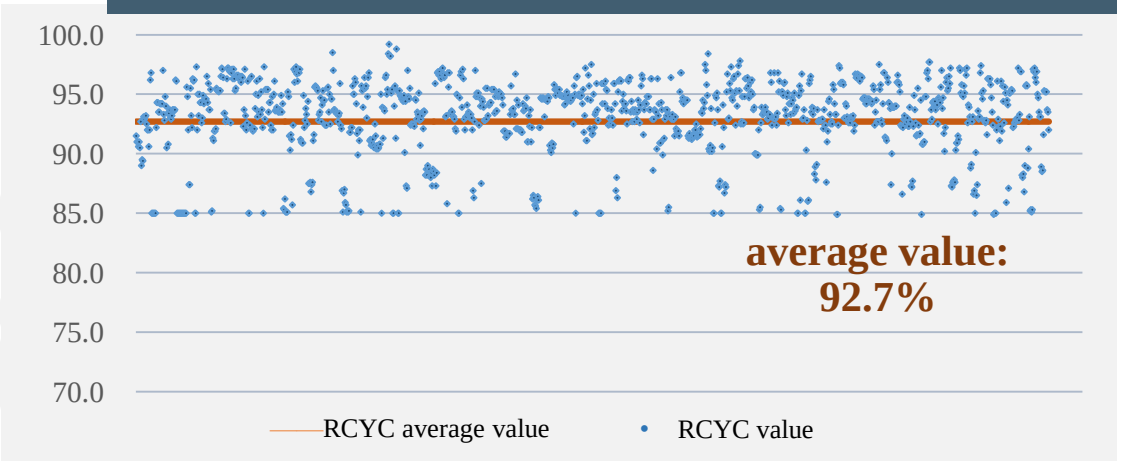
2. Overall management and control capacity of the industry: RCYC and RCOV

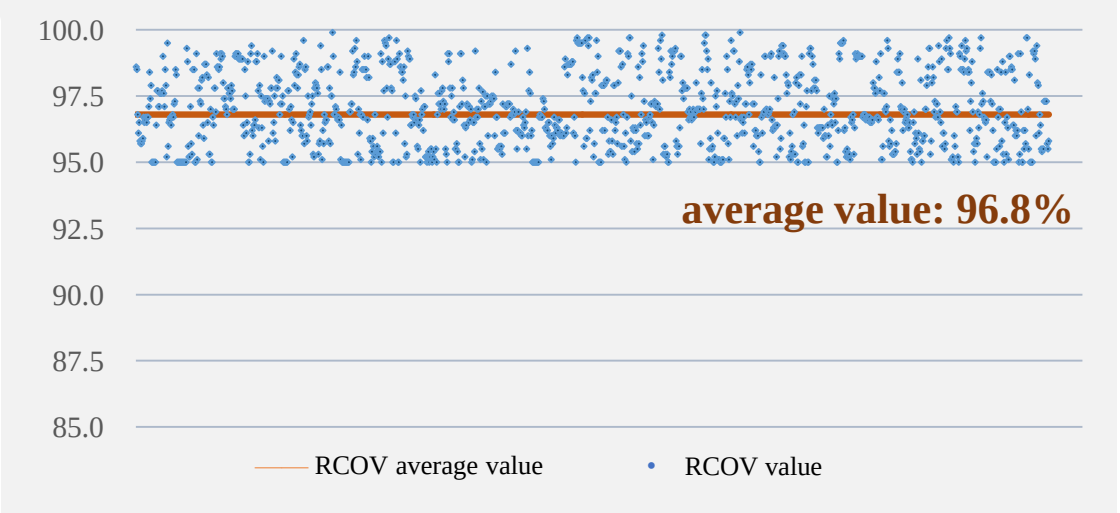
Management capacity of two indicators in 2016





Management capacity of two indicators in 2017

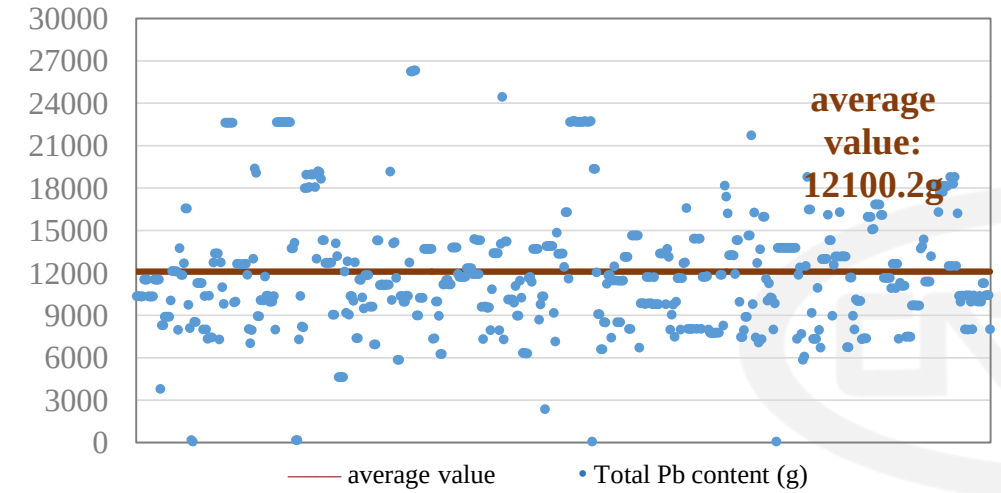


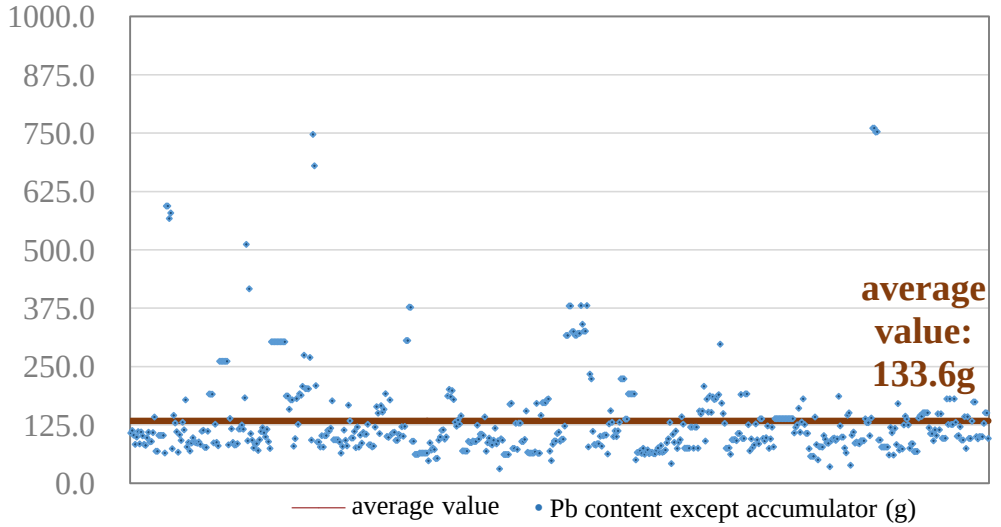


2. Progress and Achievements of ELV Management

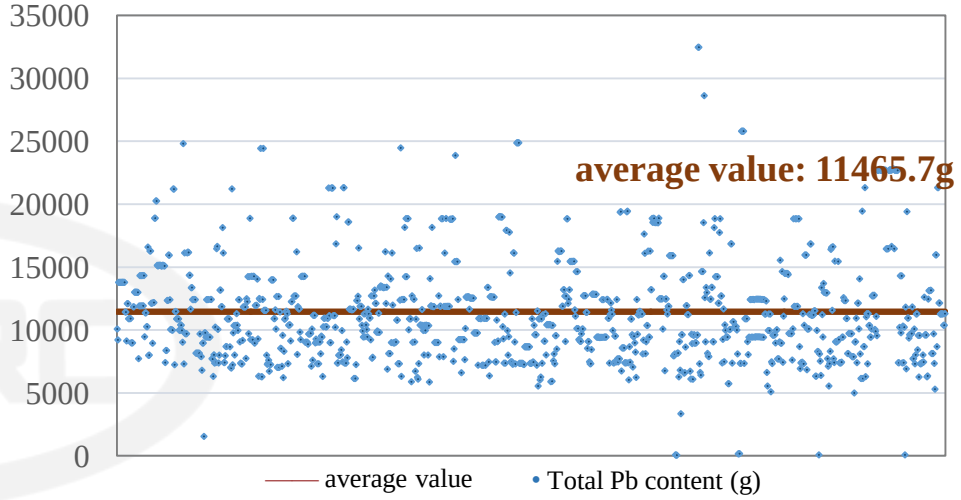
3. Overall management and control capacity of the industry : hazardous substances

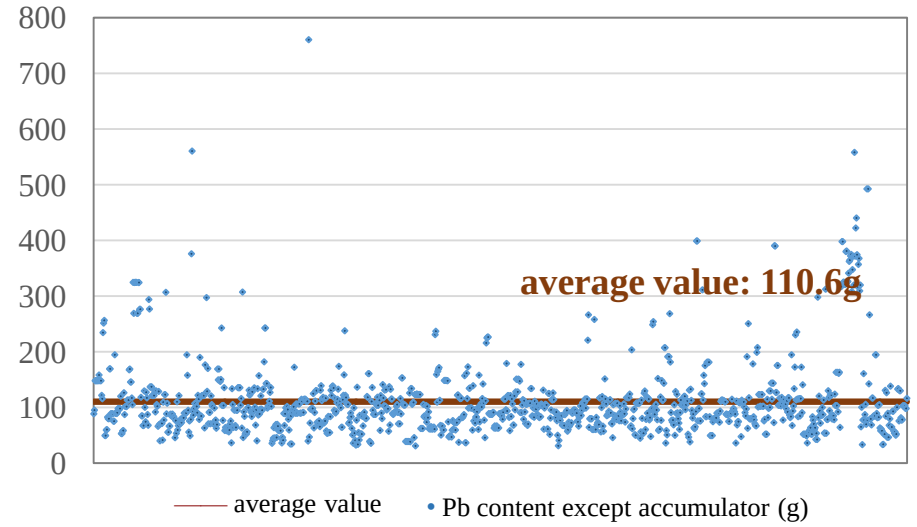
Management and control capacity of hazardous substances in 2016(g)





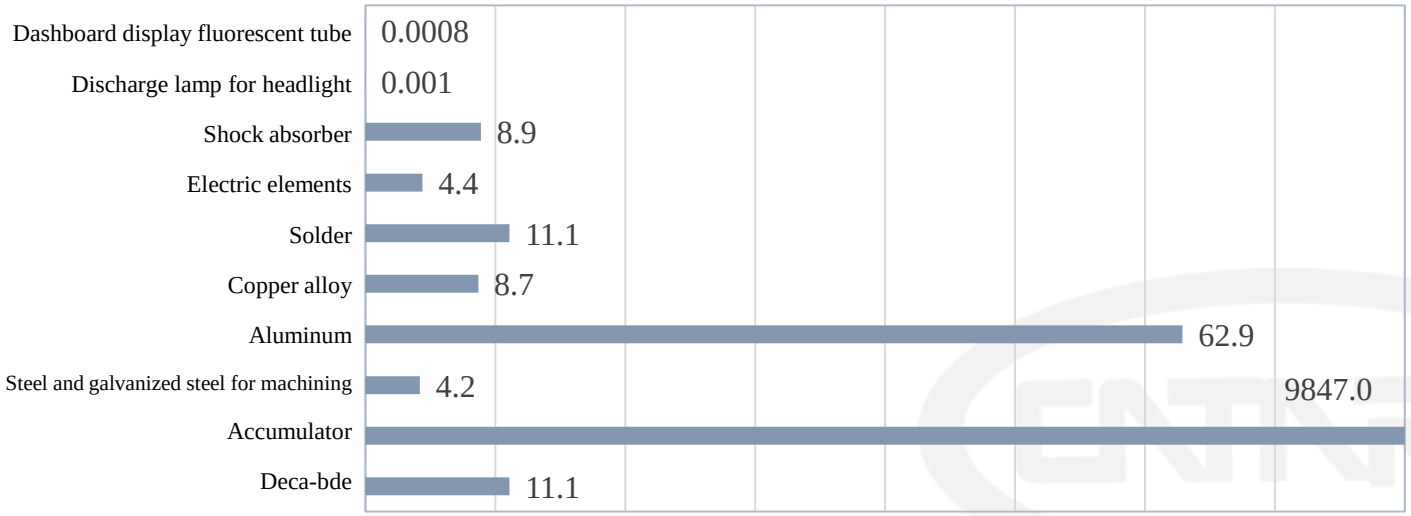
Management and control capacity of hazardous substances in 2017(g)





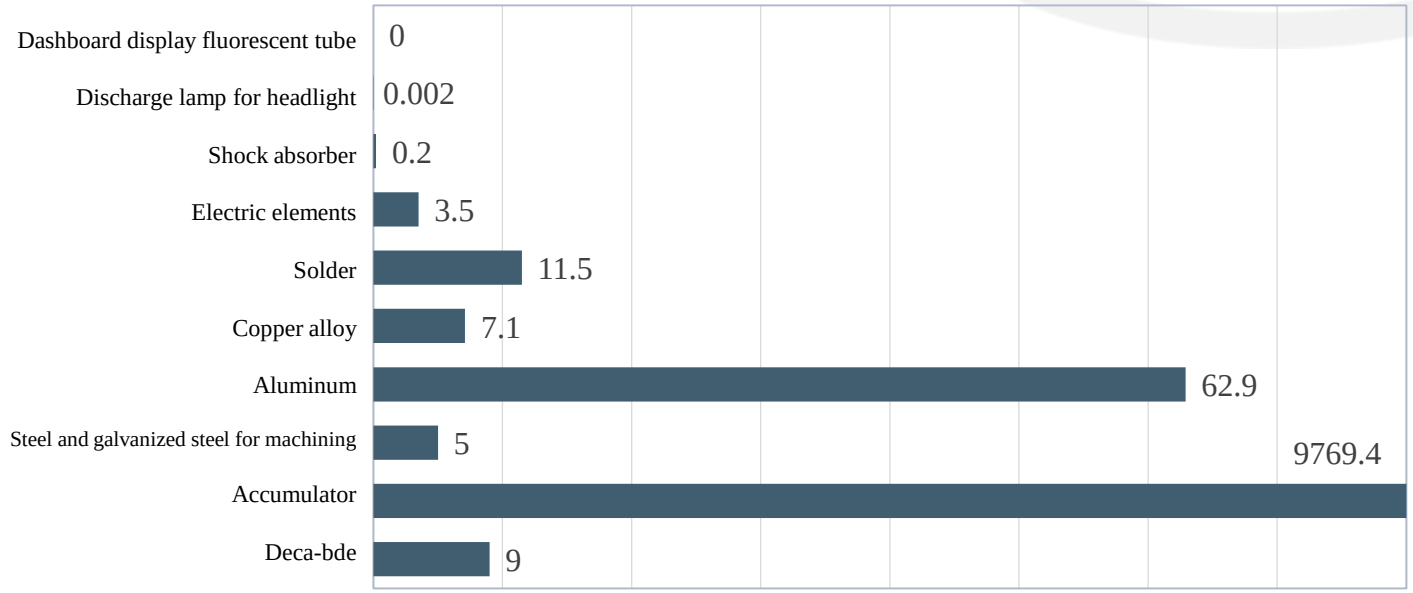
2. Progress and Achievements of ELV Management

4. Average lead content of major exemption items for a single vehicle



Capacity for management and control of hazardous substances in exemption materials in 2016

- Lead content is the highest in accumulator, which is 9847.0g.
- Second highest in aluminum, lead content of which is 62.9g.
- Lowest in steel, lead content of which is 4.2g.



Capacity for management and control of hazardous substances in exemption materials in 2017

- Lead content is the highest in accumulator, which is 9769.4g, marking a minor decrease compared with 2016.
- Second highest in aluminum, the lead content of which is 62.9g.
- Lowest in shock absorber, lead content of which is 0.2g.
- A small amount of mercury is found in the electricity-discharged lights of headlight, which is 0.002g.
- Deca-BDE is found in certain models, and the average value is 9g.

2. Progress and Achievements of ELV Management

Major achievements: the management and control capacity of ELV continues to improve, and the international competitiveness of China's automobile industry continues to increase

■ **Since the implementation of ELV Management Regulations, the industry and society have paid more attention to it, which urges enterprises to attach importance to the reduction and substitution of hazardous substances, promote the green transformation and upgrading of automobile industry, and achieve remarkable results.**

Construct ELV Management and Control System for overall Automobile Industry chain

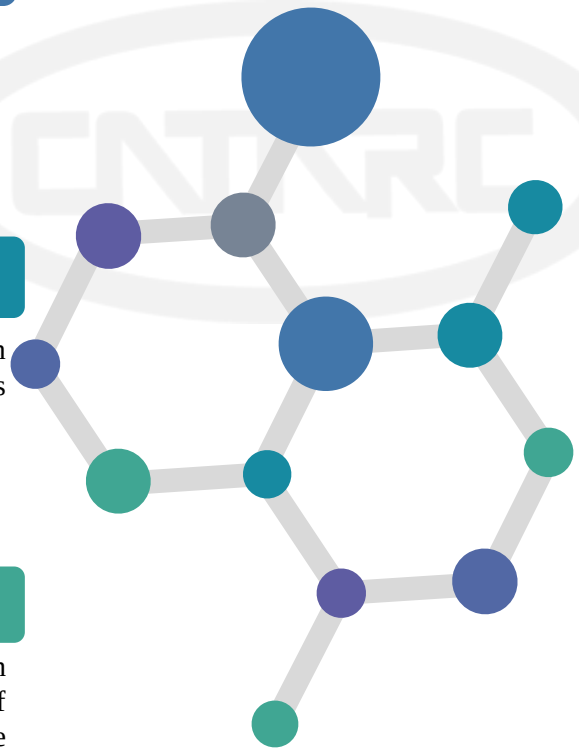
- Cover upstream, midstream and downstream of automobile industry chain including more than 110 passenger vehicle manufacturers, more than 28,000 spare parts and hundreds of materials enterprises, and concerning annual production of more than 24 million cars, accounting for more than 80% of the total car production.

Improve RRR level of cars

- The reutilization ratio of 97.6% automobile products is more than 85% and, and the reutilization ratio of 93.2% automobile products is over 95%.

Improve supply and consumption levels of green products

- Industry publicity and announcement of compliance verification results make the whole industry pay close attention to the control of hazardous substances, expand the supply of green automobile products, and promote green consumption.



Extensive application of substitution and reduction techniques

- In 2017, the average lead content (excluding accumulator) of M1 cars decreased to 110.6g/car.
- With full management and control for ELV of in-production cars, the automobile industry is expected to cut more than 2800 tones of lead a year.

Form Communication Mechanism at the front-end and back-end of Automobile Industry chain

- The automobile manufacturers provide the *Vehicle Disassembly Instruction Manual* to the recycling and disassembly enterprises, and opens the precedent of communication cooperation between the front-end vehicle design and the back-end recycling and disassembly.

International Competitiveness of China's Automobile Industry

- The implementation of ELV regulations narrows the technological gap between China and international advanced level, make the batch export of Chinese automobile products to EU become a reality, and rapidly enhance the competitiveness and international influence of Chinese automobile brands.

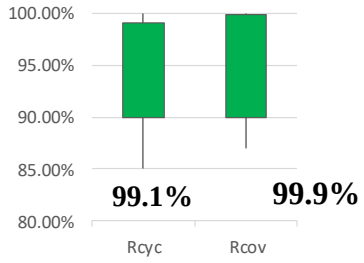
3 Research Status of Management of ELV Consistency

3.Research Status of Management of ELV Consistency

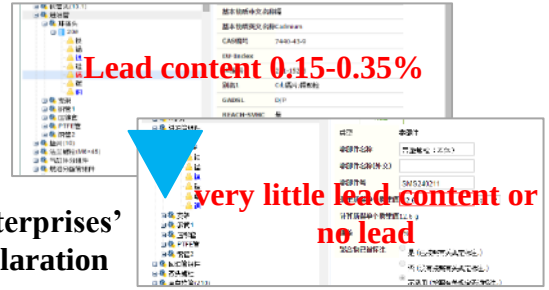
1.Survey of ELV consistency

1.The authenticity of two indicators accounting is unknown

Two indicators accounting of the industry is generally high, some even close to 100%.



2.Data authenticity needs to be checked and verified



Enterprises' declaration

Survey

3.Practical implementation of management support measures is unclear

The management support measures submitted by some enterprises are not well implemented, resulting in more problems in product data document.

2 car samples

Model 1—traditional compact hatchback by domestic joint venture
Model 2—traditional compact notchback by domestic joint venture

79 part samples

- M1 cars: 45 spare parts from 21 enterprises
- N1 cars: 18 spare parts from 2 enterprises
- Imported cars: 16 spare parts from 3 brands

3 management systems

- One domestic M1 automobile enterprise;
- One domestic M1 + N1 automobile enterprise;
- One joint venture M1 automobile enterprise.

3.Research Status of Management of ELV Consistency

2. Carry out vehicle validation and data survey results

Test results of car samples

◆ **Test results of hazardous substances**

Car Model 1

Point number tested: 15592

Spare parts containing hazardous substances（1）

(rubber of cleansing hose for back windscreen wiper)

Car Model 2

Point number tested: 17214

Spare parts containing hazardous substances（6）

(Compressor air conditioning tube-metal piece, metal sheet, metal wire, back row foot mat, button cover, valve core)

◆ **Results of polymer signs**

Plastic

Car Model 1
164/200（82.0%）

Car Model 2
229/238（96.2%）

Rubber

Car Model 1
12/13（92.3%）

Car Model 2
16/16（100%）

No.	Name of spare part	Qty	Disassembly weight(single)/g	Material type	Hazardous substances content/ppm	No.	Name of spare part	Qty	Disassembly weight(single)/g	Material type	Hazardous substances content/ppm
Car Model 1											
1	rubber of cleansing hose for back windscreen wiper	1	1.45	Polymer	Pb：2232 Cd：182	——					
Car Model 2											
1	Compressor air conditioning tube-metal piece	1	0.21	Steel	Pb：29400	4	Back row foot mat	1	260	Polymer	Pb：1484
2	Metal sheet	6	0.11	Aluminum	Pb：7970	5	Button cover	1	0.06	Aluminum	Pb：171316
3	Metal wire	1	0.51	Aluminum	Pb：6958	6	Valve core	1	5.96	Copper alloy	Pb：40470

3.Research Status of Management of ELV Consistency

3.Carry out part samples validation and data survey results

Test results of part samples

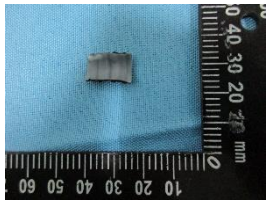
- **Test results of hazardous substance**

  - ✓ 227 tested point number of M1 cars: meet standard requirements
  - ✓ 448 tested point number of N1 cars: 2 of which don't meet standard requirements
  - ✓ 713 tested point number of imported parts: meet standard requirements

- **Results of polymer signs**

M1	5/7（71.4%）
N1	4/6（66.7%）
Imported parts	3/5（60.0%）

	Brand 1	Brand 2	Brand 3
Plastic parts	1/1 compliant	0/0	3/5 Not compliant
Rubber and thermoplastic elastomers	0/0	0/0	0/0



3.Research Status of Management of ELV Consistency

4. Survey of management system

Results of survey of management system

- **Enterprises are compliant with majority of the checking points, but still fall short in certain areas.**

No.	Checking Points	Enterprise 1	Enterprise 2	Enterprise 3
1	Consistency of ELV management guidelines and purposes of hazardous substances and recycling ratio	✔	✔	✔
2	Consistency of ELV management resources and logistics	✔	✔	✔
3	Professional personnel with proper training (e.g. CAMDS training)	✔	✔	✔
4	Consistency of ELV management system and document management	✘	✔	✔
5	Consistency of ELV management standards	✔	✔	✔
6	Consistency in communicating the requirement on limiting the use of hazardous substance to suppliers and relevant supporting documents on the part of the company	✔	✔	✔
7	Consistency of management regulations in processes of data collection, verification, analysis, management and accounting	✔	✘	✔
8	Consistency in material signs	✘	✔	✔
9	Consistency of drafting and publication of Vehicle Disassembly Instruction Manual	✔	✘	✔
10	Consistency of support measures for mass production	✘	✘	✔

Main Problems

Enterprise 1

- Material signs missing in some blueprints
- Procedure for on-site material sign check missing
- No company-level high-risk parts checklists
- ELV production consistency correction document missing

Enterprise 2

- Latest industry technical checklist not applied in RRR accounting
- Standardized procedure for drafting disassembly instruction manual missing
- ELV production consistency correction document missing

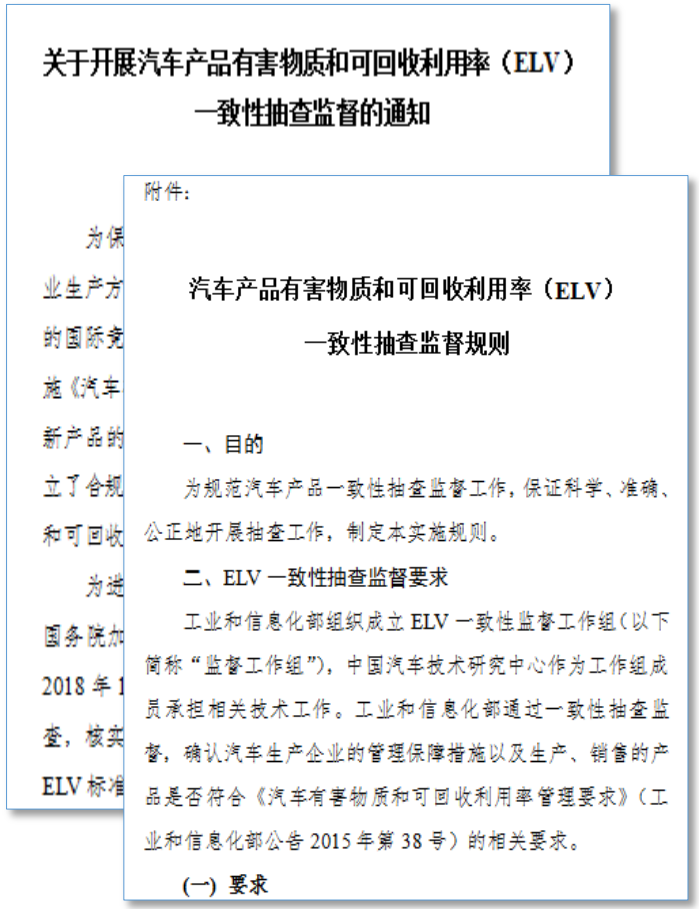
Enterprise 3

- Fully compliant

3.Research Status of Management of ELV Consistency

5. Research results of consistency management thought

- **Complete the Regulations for ELV Consistency Management (draft)**
- **With the guideline of specific supervision requirements, standardized supervision procedures, formulation of punishment mechanism and establishment of close-circuit management system, it should include the five following parts.**



关于开展汽车产品有害物质和可回收利用率（ELV）一致性抽查监督的通知

附件：

汽车产品有害物质和可回收利用率（ELV）一致性抽查监督规则

一、目的

为规范汽车产品一致性抽查监督工作，保证科学、准确、公正地开展抽查工作，制定本实施规则。

二、ELV 一致性抽查监督要求

工业和信息化部组织成立 ELV 一致性监督工作组（以下简称“监督工作组”），中国汽车技术研究中心作为工作组成员承担相关技术工作。工业和信息化部通过一致性抽查监督，确认汽车生产企业的管理保障措施以及生产、销售的产品是否符合《汽车有害物质和可回收利用率管理要求》（工业和信息化部公告 2015 年第 38 号）的相关要求。

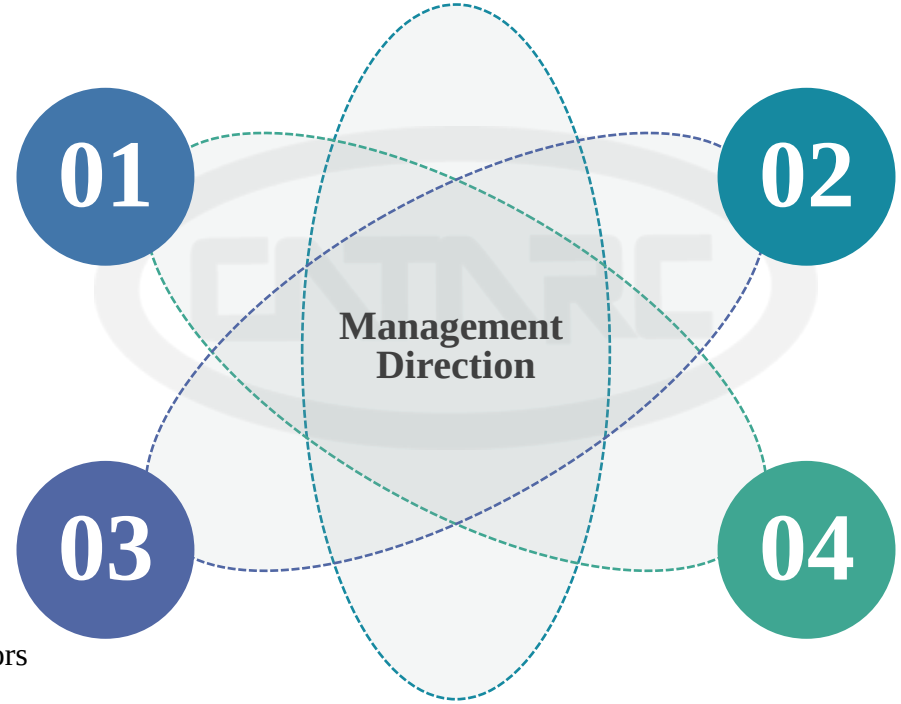
(一) 要求

- **1. Purpose**
- **2. Requirements for ELV Consistency Spot-Check and Supervision**
  - Request, spot-check car samples (part samples), judge.
- **3. Implementation of Spot Check and Supervision**
  - Spot-check preparation: draft the *Work Plan for Spot Check and Supervision* and *Work Schedule for Automobile Products ELV Consistency Spot Check*
  - Spot-check implementation: On-site verification →Sampling Vehicle/Spare parts (production site, finished product warehouse, sales) →Test verification → Verification conclusion and notification→ Objection complaint treatment → Problem rectification and review.
- **4. Public Notification and Punishment**
  - For non-compliant companies, measures will be taken against them in accordance with the nature of their offense, including reprimand, correction within prescribed time limit, public notification, blacklisting in the Business Credit Management System, suspension of license and removal of relevant products.
- **5. Appendix**
  - Ministry of Industry and Information Technology organizes spot checks and supervision activities. The third party institution carries out specific technical work including facilitating the drafting of Work Plan for Spot Checks and Supervision, and authorization of test organizations and re-inspection organizations.
  - The third party institution is responsible for documentation (e.g. plans and reports) of spot checks and supervision, and submission of documentation to MIIT for archiving
  - Matters on which cooperation is expected from automobile enterprises.

4 Future Management Direction of ELV in China

4. Future Management Direction of ELV in China

Based on the problems of the industry and international experience, the research on ELV management system is continued in the following aspects: consistency management, ELV exemption list, actual RCYC and RCOV calculation standard, expansion of management scope and so on.



Carry out consistency spot check

- Push the issue of the *ELV Consistency Management Regulations*, start consistency spot-check work

Research on exemption scope of hazardous substances

- Some exemption items have expired and cannot meet current management needs and need further study;
- Establish exemption period of hazardous substances of spare parts such as accumulators, shock absorbers, solder, air conditioners, discharge lamps, fluorescent tubes, etc.

Research on actual RCYC and RCOV calculation

- Introduction of two practical indicators due to the peaking of indicators in theory;
- Based on the verification of vehicle disassembly, study and establish the *Calculation Standard of Actual Reutilization Rate and Recycling Rate of Automobile*;

Extend scope of management and control

- Verify the scope of hazardous substances: asbestos, PAHs, azo fuels, Freon, carcinogenic aromatic amines, HBCDs, etc.
- Verify the applicable range of car models: M2, N1.

Thank you for your attention and your comments and suggestions are welcome