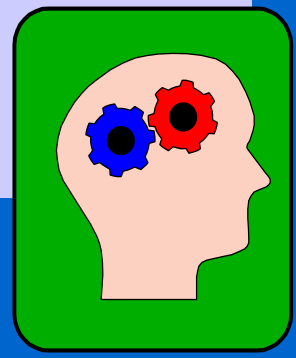
HUMAN FACTORS RESEARCH OBDII

LESSONS LEARNED



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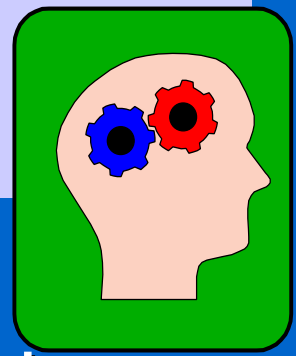
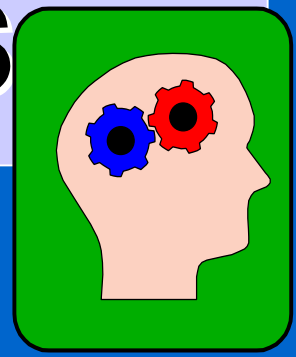
NCVECS
NATIONAL CENTER FOR VEHICLE EMISSIONS CONTROL AND SAFETY

SUCCESS OF OBDII DEPENDS ON TWO FACTORS



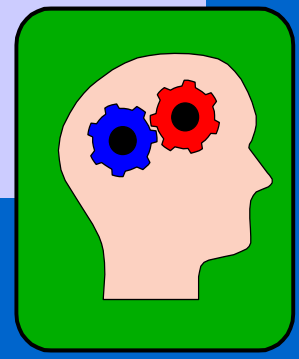
- Effectiveness of the OBDII Monitoring System
- Reaction/Acceptance of the OBDII System by the Driving Public

HUMAN FACTORS



The systematic application of the knowledge of human characteristics (e.g., cognition, perception, motivation, social behavior, and performance) to product design, job design, workplaces, and equipment.

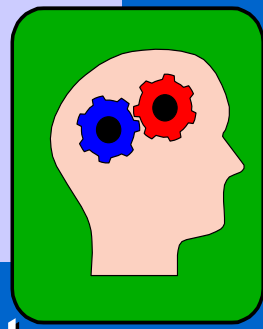
HUMAN FACTORS FOCUS:



The examination of the “human factors”: concerned with drivers’ awareness and knowledge about; response to; and acceptance of OBDII technology.

AWARENESS

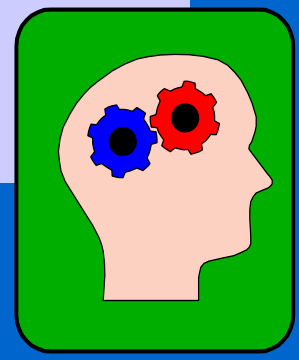
"Are You Aware of the Link Between the Light and Emissions?"



- Not aware of the link between the light and emissions
- Never told about On-Board Diagnostics
- Are aware that the flashing light is more serious
- "Drivers need more information – it's all about education"

KNOWLEDGE

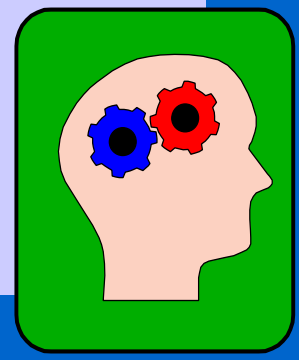
"What Does the Light Mean?"



- Mystery light – light could be an indication of problems with fluids, temperature, or the electrical system
- "Engine light more scary to me than the oil light because the engine is such a 'big' part of the car"
- Told by the dealer: "when a car reaches a certain number of miles, the light comes on"
- "I thought it was a way for the dealers to get more money for service on the vehicle"

RESPONSE

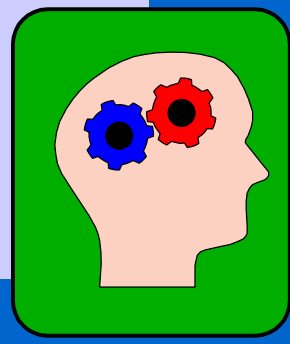
"What Would/Did You Do When the Light Came On?"



- Drivers do respond to the MIL
- Response sequence
  1. Check manual
  2. Call technician/dealer/significant other
  3. Take it to be fixed
- "Next Time I'll Ignore It!"

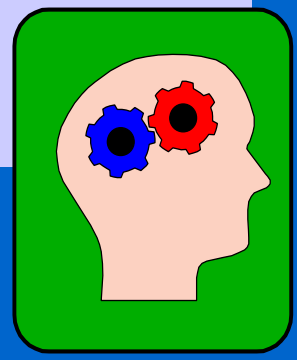
ACCEPTANCE

"Do You Think the Driving Public Will Accept OBDII Technology?"

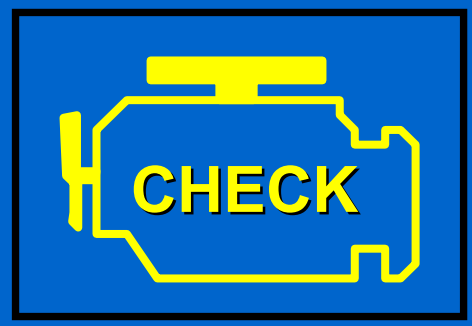


- The technology is not consumer friendly; "when the light goes on and off the message to the consumer is to not respond"
- "Most people will not get their car serviced if they know the light is a result of poor emissions. They will be more willing to take action if the light is a function of performance, especially since repairs aren't cheap anymore"
- "Could be a good warning system if it functioned properly"

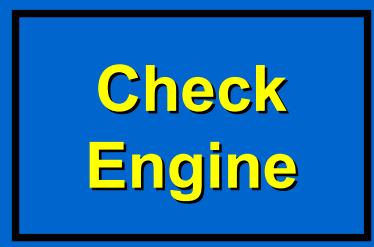
OWNER'S MANUAL INFORMATION



- Service Engine Soon
- Check Engine



- Malfunction Indicator Light/Lamp



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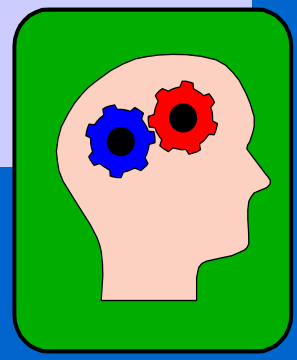
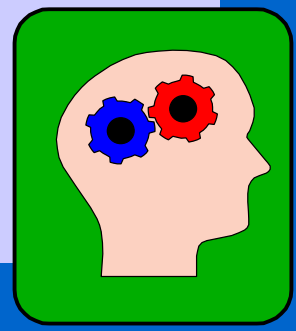


Service Engine Soon Warning Light

This light illuminates when the engine's Emission Control System requires service. It will also illuminate when the ignition key is in the ON position and the engine is off.

SERVICE
ENGINE
SOON

OWNER'S MANUAL INFORMATION



CHECK ENGINE warning light/Malfunction Indicator Lamp

If this light comes on steadily or blinks while the engine is running, it may indicate that there is a problem or potential problem somewhere in the emission control system.

If the light comes on steadily:

If the light comes on steadily while driving or does not go out after the engine starts, an emission control system malfunction has been detected. You should have your vehicle checked by an authorized dealer immediately.

NOTE:

This light also comes on when the fuel filler cap is not tightened until it clicks.

If you have recently refueled your vehicle, the cause of the CHECK ENGINE warning light/malfunction indicator lamp coming on could be a loose or missing fuel filler cap. Remove the cap and retighten it until it clicks. Make sure nothing is interfering with the sealing of the cap. Tightening the cap will not make the CHECK ENGINE warning light turn off immediately. It may take several driving trips. If the light does not go out, take your vehicle to your authorized dealer immediately.

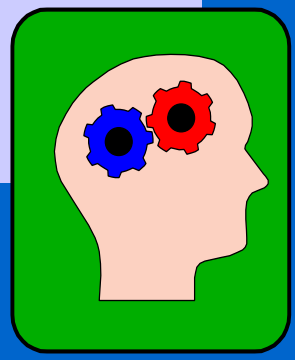
If the light is blinking:

If the light is blinking while driving, an engine misfire condition has been detected which may damage the emission control system. To prevent serious damage to emission control system, you should do the following:

- Reduce vehicle speed.
- Avoid hard acceleration.
- Avoid steep uphill grades.
- Reduce the amount of cargo, if possible.
- Stop towing a trailer as soon as possible.

The CHECK ENGINE warning light may stop blinking and come on steadily after several driving trips. You should have your vehicle checked by an authorized dealer immediately.

MIL/OBDII MESSAGE



1st "Saves You Money" in two ways:

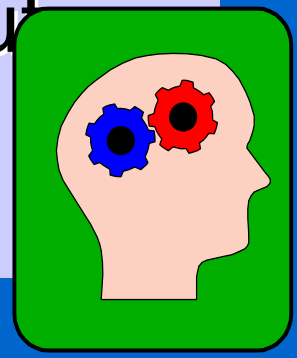
- Preventing more costly repairs
- Getting better gas mileage

2nd "Protects the Overall Performance of Your Car"

3rd "Protects the Quality of the Air"

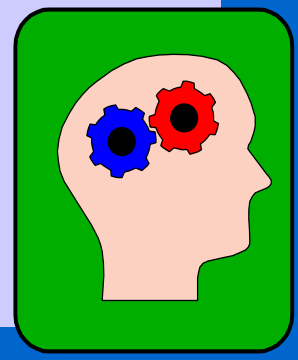
INFORMATION DISSEMINATION

"Where Would You Like to Find Out What the MIL/OBDII Technology Means?"



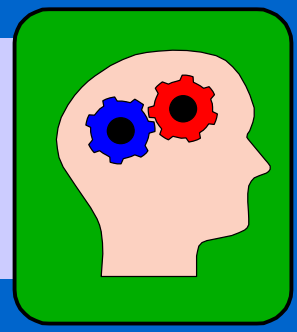
- Point of Purchase
- Point of Repair
- Point of Inspection (I/M)
- Manual – easy to find and sufficient information

OBSERVATIONS
LESSONS LEARNED



- Success of on-board diagnostics depends on the effectiveness and acceptance of OBDII technology
- “Mystery Light” – the driving public is unclear about the meaning of the MIL
- They are not aware of the OBDII system
- They DO respond to the MIL
- They often LEARN to ignore the MIL after being “told to ignore the light”
- They would like more information about the MIL/OBDII system at the proper time, and
- They would accept the OBDII technology if they were better informed and it was mandatory

RECOMMENDATIONS



- Auto manufacturers need to provide consistent, detailed and easily located OBDII information in their manuals
- Training is needed for technicians to better understand OBDII and to better communicate with their customers
- Public education is needed to inform the public of the function of the MIL as an early warning system
- The MIL/OBDII message needs to focus on 1st saving money, 2nd protecting the vehicle's performance, and 3rd protecting the air quality, and
- The MIL/OBDII message should be presented at the point of purchase, repair or inspection

It could be a good early warning system with the proper information