



# EU RESEARCH ON CHEMICAL RISKS

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Innovation

**ECHA Workshop on  
Valuing the Health  
Impacts of Chemicals,  
Helsinki,  
11-12 January 2016**

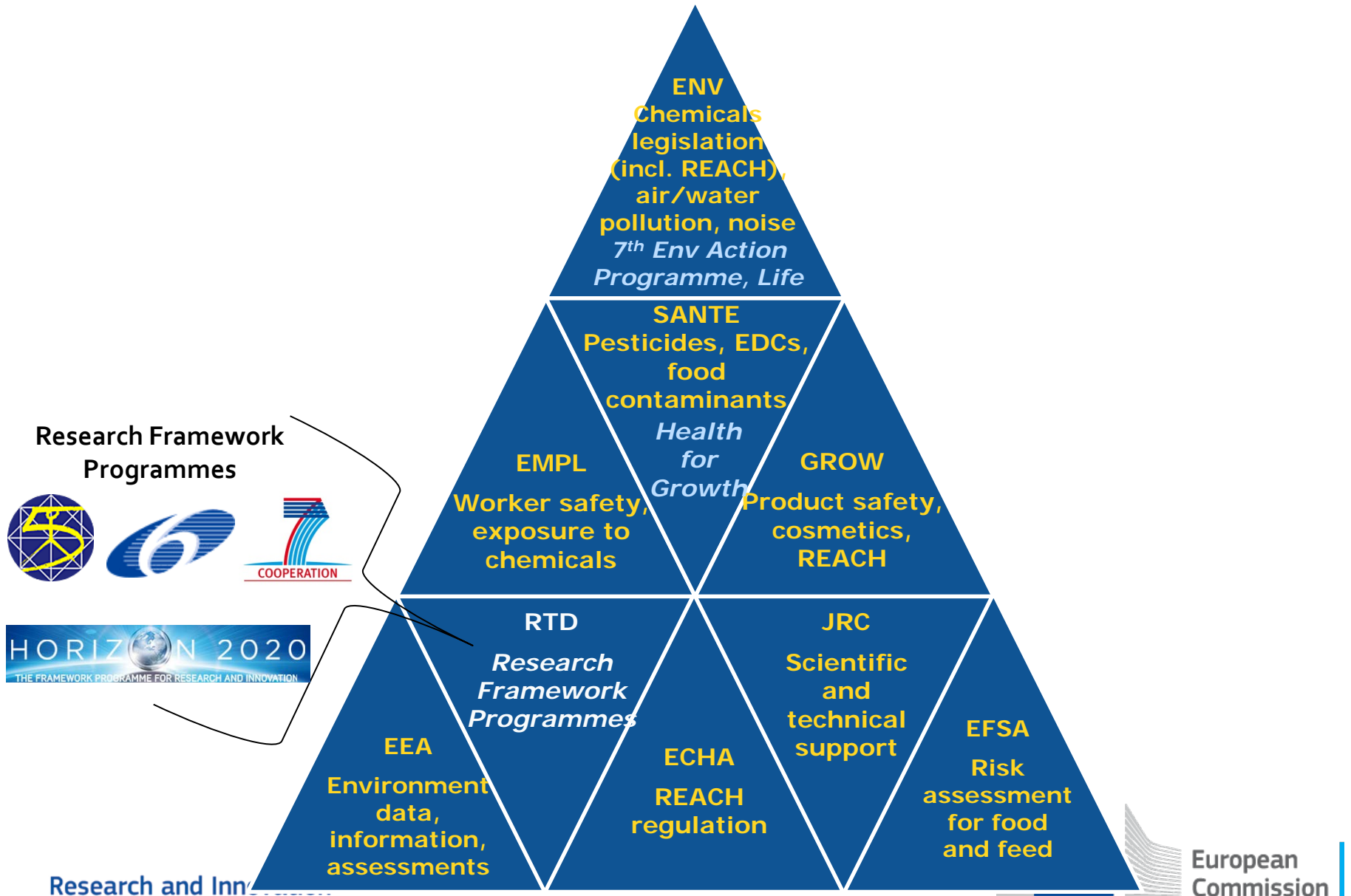
# Presentation

- ❖ **Chemical risks research in the EU - overview**
- ❖ **Update on current/planned activities**
- ❖ **Open questions**

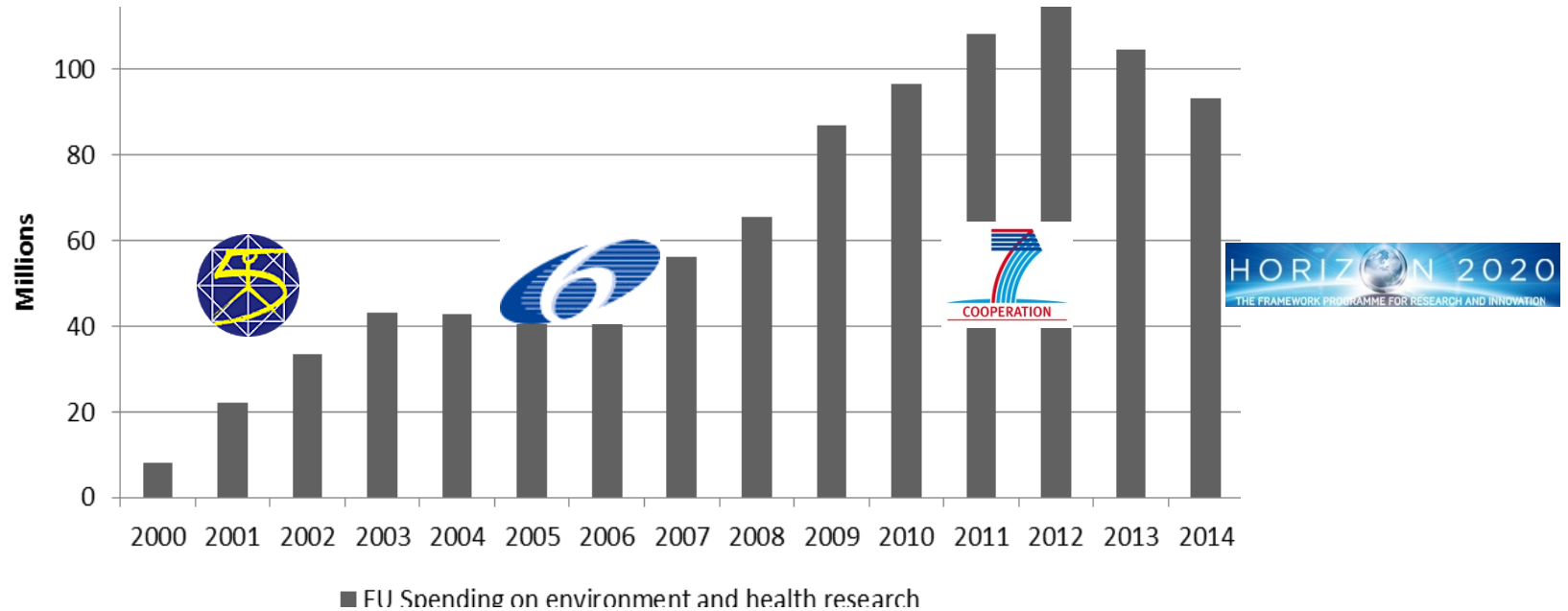
# Environment and health research funded by the EU



# Actors and activities in the EC

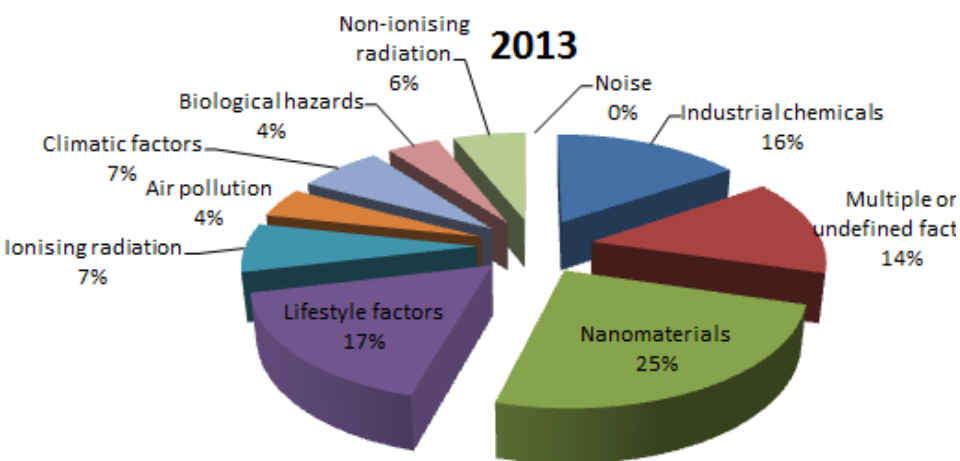
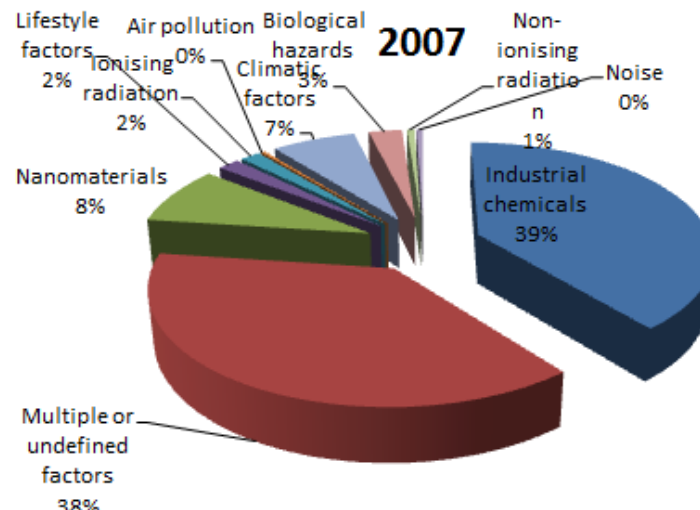
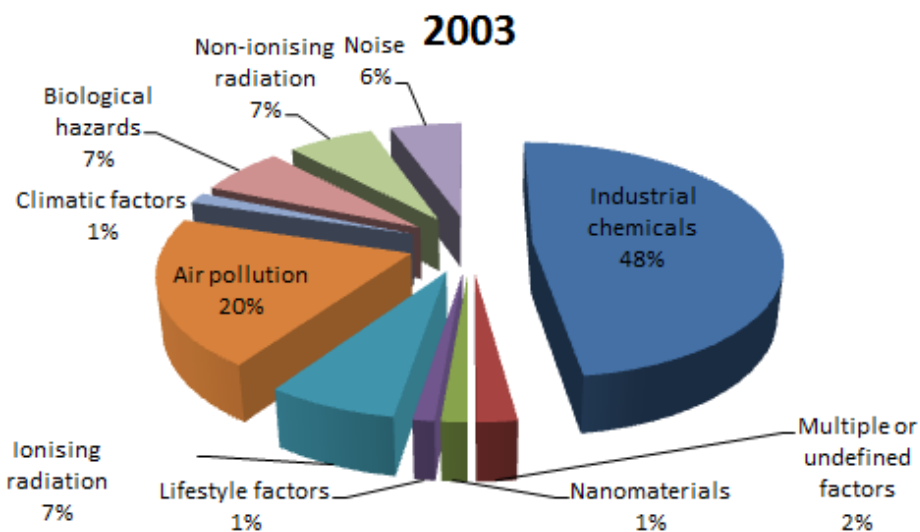


# Funding trends in environment and health research



- ❖ ~325 projects funded have received over a billion euros from FP5/FP6/FP7 (1998-2014)
- ❖ Wide reaching outreach:
  - FP6: 612 institutions from 58 countries world-wide
  - FP7: 1190 institutions from 68 countries worldwide

# What has been funded?



## HEALTH END-POINTS (FP7)

- Genotoxicity, cancer
- Ecotoxicological effects
- Atopic diseases, immune effects
- Neurodevelopmental effects, brain effects, neuro(cyto)toxicity, mental health and disorders
- Cardiovascular effects
- Respiratory health, lung function, inflammation
- Reproductive health
- Obesity
- Infectious diseases
- Diabetes
- Overall mortality

# 'Success story' - ESCAPE

*European study of cohorts for air pollution effects (2008-2012)*



Coordinator	Prof. Bert Brunekreef, Utrecht University, the Netherlands
EC contribution	€ 5.9 million
Webpage	<a href="http://www.escapeproject.eu">www.escapeproject.eu</a>
Main aim	Address uncertainty about the magnitude and nature of the health impacts of long-term exposure to air pollution to tackle high costs of air-pollution related health problems
What was done and main outcome?	<ul style="list-style-type: none"><li>▪ 30 European cohort studies including some 900 000 subjects</li><li>▪ Provided important <u>new data</u> (publications still coming out) <u>for risk assessment</u> of ambient air pollution and review of guidance values. E.g.,<ul style="list-style-type: none"><li>➤ Found evidence of an association between fine particles and incidence of cerebrovascular events in Europe, even at lower concentrations than set by the current air quality limit value (<i>Environ Health Perspect</i> 2014, 122: 919–925)</li><li>➤ Particulate matter air pollution contributes to lung cancer incidence in Europe (<i>Lancet Oncol</i> 2013 14:813-822)</li></ul></li></ul>



# Overview available

*'Trends and current state of EU-funded research on environment and health'*  
(Chapter 17)

In: *'Improving environment and health in Europe: How far have we gotten?'*  
(2015)







*Integrating epidemiology and experimental biology to improve risk assessment of exposure to mixtures of endocrine disruptive compounds (2015-2019)*

# Project on chemicals

Coordinator	Prof Åke Bergman, Swetox, Sweden
EC contribution	€ 6.2 million
Webpage	<a href="http://edcmixrisk.ki.se">http://edcmixrisk.ki.se</a>
Main aim	Improve our understanding of the mechanisms and health effects of endocrine disrupters, in particular in mixtures to support risk assessment
What will be done and expected outcome?	<ul style="list-style-type: none"> <li>▪ Using epidemiological approaches (mother-child cohorts), <u>EDC mixtures</u> associated with multiple adverse health outcomes (growth and metabolism, neurodevelopment and sexual development) will be <u>identified</u>;</li> <li>▪ Using state-of-the-art experimental models, <u>molecular mechanisms and pathways</u> underlying the associations between exposure and adverse health outcomes will be <u>identified</u>;</li> <li>▪ Based on these, a <u>transparent and systematic framework in risk assessment</u> will be developed for EDCs and their mixtures</li> </ul>

# Project on chemicals



**EUTOXRISK<sub>21</sub>**

*An integrated European 'flagship' program driving mechanism-based toxicity testing and risk assessment for the 21st century (2016-2021)*

Coordinator	Prof Bob van de Water, Leiden University, The Netherlands
Participants	<ul style="list-style-type: none"> <li>▪ Participation of large industries, SMEs, regulators</li> <li>▪ ROCHE, BASF, Unilever, L'Oreal, Cosmetics Europe, SimCyp, CAAT-EU</li> </ul> <p>Built on FP7 and IMI projects</p>
EC contribution	€ 27 798 299
Webpage	<a href="http://www.eu-toxrisk.eu">http://www.eu-toxrisk.eu</a>
Main aim	<ul style="list-style-type: none"> <li>• Drive a paradigm shift in toxicology towards an animal-free, mechanism-based integrated approach to chemical safety assessment</li> </ul>
What will be done and expected outcome?	<ul style="list-style-type: none"> <li>▪ Mechanism-based safety testing strategy</li> <li>➤ Repeated dose toxicity in 4 organs (liver, lung, kidney and nervous system)</li> <li>➤ Developmental and reproductive toxicity (incl. ED)</li> <li>➤ 200 compounds</li> <li>▪ Test systems - single cells to 4 organs-on-a-chips</li> </ul>

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European Commission

# Project related to health impact assessment



*Urban reduction of GHG emissions in China and Europe  
(2011-2014)*

Coordinator	Prof Clive Sabel, University of Bristol, UK
EC contribution	€ 3.5 million
Webpage	<a href="http://www.urgenche.eu">http://www.urgenche.eu</a>
Main aim	Estimate the public health and well-being impact of urban-scale implementation of city greenhouse gas emission (GHG)-mitigation policies (e.g., public transport, fuel changes in cars, energy), involving five EU and two Chinese cities
What was done and main outcome?	<ul style="list-style-type: none"> <li>Developed a GIS-based <u>modelling platform and a related database for urban impact assessment</u>, covering energy generation and use, spatial data, building stock, transportation and population factors (i.e. socio-economic, demographic, exposure, health and well-being).</li> <li>Outcomes from most policy scenarios showed only <u>marginal additional health benefits</u> of the measures proposed</li> </ul>



# Project related to health impact assessment



## *Foresight and modelling for European health policy and regulation (2015-2018)*

Coordinator	Prof Jean-Paul Moatti, Aix Marseille School of Economics, Marseille, France
EC contribution	€ 2.7 million
Webpage	<a href="http://www.foresight-fresher.eu">http://www.foresight-fresher.eu</a>
Main aim	<ul style="list-style-type: none"> <li>• Detect emerging health scenarios to test and assess future policy options to tackle the burden of chronic non-communicable diseases (NCDs) in Europe</li> </ul>
What will be done and expected outcome?	<ul style="list-style-type: none"> <li>• Identify <u>core determinants that could be targeted to lessen the impact of NCDs</u>;</li> <li>• Use a variety of <u>foresight techniques</u> to identify interdependencies of long-term trends in demographic, gender relations, technological, economic, environmental, and societal factors in Europe, linking them to mapping of determinants of NCDs;</li> <li>• Based on these, build an <u>empirically-based dynamic micro-simulation tool</u> capable of quantifying the current and future health and economic impacts of risk factors</li> </ul>

# Peek into the future

# Next Health call for proposals (2016-2017)



**Topic**

*SC1-PM-20-2017: Development of new methods and measures for improved economic evaluation and efficiency measures in the health sector*

**Topic text to be developed**

**Expert meeting - research on new methods for improved economic evaluation - Brussels, 26 January 2016**

**The workshop will discuss the challenges in economic evaluation of health and the conditions for successful research in current and future scientific methods relevant to health care systems.**

<https://ec.europa.eu/programmes/horizon2020/en/draft-work-programmes-2016-17>

# Example from another field: SMART Vaccines

	<b>SMART Vaccines=Strategic Multi-Attribute Ranking Tool for Vaccines</b>
<b>Background</b>	Emerging new infections and re-emerging diseases require new vaccines for prevention. It is difficult to decide which new vaccine to develop, especially when making investment decisions in vaccine development. Thus, decision-makers working under constrained resources need tools that can be suitable within their environment and serve as an aid in vaccine prioritisation efforts
<b>What is it?</b>	A pioneering <u>decision-support software tool</u> to help prioritise new vaccines for development. The software is designed to self-guide the user through the prioritisation process.
<b>Webpage</b>	<a href="http://www.nap.edu/smartvaccines">http://www.nap.edu/smartvaccines</a>



# European Human Biomonitoring Initiative

– supporting a better management of chemicals in our daily life

Europe has a good regulatory framework for chemicals, but decision making is hampered by lack of evidence of human exposure:

☞ **human biomonitoring**

**Joining forces and sharing knowledge:**  
6 Commission DGs, 3 Agencies & 28 countries  
linking science to policy for better regulations

## Chemicals matter!

In the economy, in the environment and for human health

☞ striking the right balance between risks and benefits



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Flame retardants



Polyfluorinated compounds



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PAHs



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Phthalates



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Bisphenols



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Cd and Cr6+



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# **EHBMI : Expected achievements**

- **Creation of a European Joint Programme to coordinate human biomonitoring (HBM) initiatives in Europe at national and EU level, building on past experience**
- **Linking research to evidence-based policy making**
- **Spreading of excellence and capacity building throughout Europe**
- **Prioritisation of chemical groups to be investigated including methodology for prioritisation**
- **Building the foundation for a sustainable HBM effort in Europe**

# Open questions

1. Are there possible connections between the planned EHBMI and the environment and health economics community?
2. How should the priority setting be carried out? Which chemicals (groups) to focus on?
3. How large is the need for environment and health economic studies? Is there capacity?
4. Is experience from other sectors (e.g., health, air pollution) transferable to the chemical sector?
5. What kind of information and evidence do decision-makers need? Is the existing evidence sufficient to make decisions?



# HORIZON 2020

**Thank you!**

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[www.ec.europa/research/horizon2020](http://www.ec.europa/research/horizon2020)

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