CURRICULUM VITAE

Professor Olivier Jolliet

1. Curriculum

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3. List of publications

4. Grant support

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DATE:28 January 2012

1. Curriculum Vitae

SURNAME : Jolliet

FIRST NAMES : Olivier Jean

PLACE + DATE OF BIRTH : Vevey (CH) 03.12.1959

NATIONALITY : Swiss

MARITAL STATUS : married

NUMBER OF CHILDREN : 2
born on : 21.08.93 and 12.04.96

EDUCATION

1988	PhD in Physics at the Swiss Federal Institute of Technology Lausanne (EPFL): "A Model of the Thermal Behaviour of a Horticultural Greenhouse"
1983	Master in Physics at the EPFL: "Simplified method of simulation for a sunspace"
1978	Swiss maturity B type, Latin-English and "Baccalauréat" X type Latin-Mathematics, Gymnase de la Cité, Lausanne

PROFESSIONAL POSITIONS

2011 - present	Full professor in Environmental Health Science at the School of Public Health, University of Michigan, Ann Arbor, Michigan - Center for Risk Science.
2005 - 2011	Associate professor in Environmental Health Science at the School of Public Health, University of Michigan, Ann Arbor, Michigan - Center for Risk Science.
1999 - 2005	Assistant professor, team leader in industrial ecology - life cycle systems at the Institute of Environmental Science and Technology at the EPF-Lausanne.
1999 and 2004	Invited scientist at the National Lawrence Berkeley Laboratory.
1997	Visiting scholar on the environmental optimization of materials at the Massachusetts Institute of Technology (MIT), Cambridge, MA, Materials Systems Laboratory.
1993 - 1998	Project leader on life cycle impact assessment at the Institute of Soil and Water Management of the Rural Engineering Department of the EPF-Lausanne.
1991 - 1993	Project leader on environmental life cycle assessment for agriculture at the Swiss Federal Research Station for Farm Management and Agricultural Engineering, Taenikon, German speaking part of Switzerland.
1989 - 1991	Postdoctoral Researcher on optimization of humidity and water balances at the Silsoe Research Institute (Formerly the National Institute of Agricultural Engineering), physics department, Silsoe, Great Britain.
1986 - 1989	Professor of building physics at the Department of architecture of the Geneva Engineers' School (part time).
1983 - 1989	Researcher on modeling of energy consumption in greenhouses at the Solar Energy and Building Physics Laboratory at the EPF-Lausanne.

EDUCATION, DIPLOMA AND AWARDS DURING EMPLOYMENT

2008	Best poster Award, MIT-Alliance For Global Sustainability conference
2007	Perl award to Quantis - Dr Jolliet's start-up company - for the most dynamic regional company, recognizing its creativity and the determination of its founders.
2006	HERA award for best paper of year 2006 in Integrated Risk Assessment
2002-2003	APEX Award for Publication Excellence (SETAC Book), Best poster awards at 2002 SETAC-LCA case study &2003 International Society of Industrial Ecology symposiums.
1996	IMD, Institute of Management Development. The Change Program, May 1996.
1992	2nd Prize of the "Forschungsreportage-Wettbewerbes 1992", Berne University.
1991	English proficiency of Cambridge, GB, with B mention.
1990	Postgraduate courses in soils physics at Silsoe College, Cranfield Institute of Technology, Great Britain.
1978	Louis-Roux prize in Physics

LANGUAGES

Mother tongue:	French
Very good knowledge:	English (Cambridge proficiency)
Good knowledge:	German (writing & speaking proficiency) + Swiss-German (comprehension & speaking skills)
Knowledge:	Spanish (functional writing & speaking including scientific presentations)
Elementary knowledge:	Chinese (300 ideograms)

2. Main achievements

2011 - present As Full professor with tenure in Environmental Health Science at the School of Public Health of the **University of Michigan**, Ann Arbor, MI – specialized in Life Cycle Impact Assessment and Risk Modeling.

2005 - 2011 As Associate professor with tenure in Environmental Health Science at the School of Public Health of the **University of Michigan**, Ann Arbor, MI.

Set up of the Impact and Risk Modeling Laboratory (iMod) developing and applying to emergent technology and contaminants new models and impact assessment methods in a) multi-media fate and exposure modeling, b) Physiologically-Based ToxicoKinetic modeling and c) Sustainability and Life Cycle Impacts Assessment.

Research
a) Multi-media fate and exposure modeling

This research focuses on the modeling of organic chemicals from source to population intake fractions, via multimedia transfer and bioconcentration in the food chain. Unique achievements in this domain include the following:

- Assessed direct exposure of consumer to products during use phase, including cosmetics, indoor releases of materials and consumer products (USEtoxPI project).
- Co-Published USEtox, the UNEP (United Nation Environmental Program)-SETAC model for the comparative assessment of toxics. Developed by an international team of modelers, USEtox compares the impact of 3000 chemicals on human health and is becoming the standard model for screening chemicals in Life Cycle Applications.
- Enhanced the understanding of chemical biotransfer into the food chain, for milk and meat (Ckow model) and for pesticides residues in crops as a function of the time elapsed between application and harvest (DynamiCROP model).
- Developed a suite of spatial multiscale multi-media model, including IMPACTworld, the first multi-continental multi-media model covering both fate and exposure at the global scale. Operationalized a multiscale world model that uses GIS parametrization to combine high resolution grid cells (~1 km) around a point of emission with lower resolution grid cells (100s of km) for long distance transport.
- Assessed the importance of the long range transport of toxics in shipped food. First research in the world (in collaboration with economists at the University of Geneva) to demonstrate that long range transport of POPs in shipped food is as important as long range atmospheric transport.

b) Physiologically-Based ToxicoKinetic modeling (PBTK) and bioinformatics

One of my main aims in joining the EHS department and the UM School of Public Health was to link environmental multimedia models with PBTK models to cover the continuum of pollutant exposure from spatial source to body burden. This connection has become even more critical with the increased availability of High Throughput Toxicity tests and biomarker data (e.g. NHANES) that need to be related to exposure measures. Unique achievements in this area include:

- Developed the first PBTK model including the crucial role of nanoparticle uptake by macrophages in the main organs, enabling prediction of the biodistribution in the rest of the body as a function of the injected dose.
- Analyzed the biodistribution of polyacrylamide nanoparticles showing the tissue distribution and pharmacokinetics of polyacrylamide nanoparticles injected to rats.
- Explained the dominant influence of age and historical environmental change on dioxin serum concentrations using PBTK modeling. Evaluated the contribution of current fish consumption to dioxin serum concentrations in the Midland/Saginaw population.
- Demonstrated the pre-selection of antibiotic resistance strains at low environmental concentrations, explaining why selection of resistant strains could occur even at very low concentrations of antibiotics in the environment, including levels as a low as 1/100 of the Minimum Inhibitory Concentration.

c) Sustainability and Life Cycle Impact Assessment

As one of the world leaders in the development of Life Cycle Impact Assessment (LCIA) methods, my research group has used the modeling activities described above to provide a critical scientific basis that substantially improves the evaluation of product impacts over the entire life cycle, leading to the following cutting-edge results:

- Co-developed the ImpactWorld+ method - the first Life Cycle Impact Assessment method to provide sets of environmental and health impact factors for each continent, with the capability to further regionalize the assessment.
- Quantified the impacts of global trade and consumption on human health. Created the first global model combining economic Input-Output analysis with pollutant fate, exposure and impact assessment, and applied it to particulate matter emissions. We show that a North American consumer induces as much particulate matter impact in Asia as an Asian consumer does in Asia and that ¼ of the Particulate Matter impacts in Asia are due to OECD countries outside Asia.
- Demonstrated the high spatial variation of water use impact of corn and milk production, half of the impact of corn produced in US taking place in the state of Nebraska.
- Operationalized the use of the Taylor series extension method for assessing uncertainty propagation in LCA using lognormal distributions.
- Develop LCA strategies and methods for the sustainability consortium to assess the environmental impacts of numerous products sold by large distributors (e.g. Walmart), including their supply chains.

Teaching

Courses taught:

2012 - present	EHS 796	Environmental and Health Risk Modeling - Special topics in Environmental Health Sciences
2007 - present	EHS 672	Life Cycle Assessment
2007 - 2010	EHS 508	Principles of Risk Assessment
2007 Winter	EHS 508-888	OJOC Principles of Risk Assessment
2006 - 2009	EHS 600	Professional Perspective
2008	EHS 600	OJOC Professional perspective

- Substantial contribution to teaching at U of M, taking on the responsibility to teach two departmental courses in addition to the specialty courses on Life Cycle Assessment and Impact modeling. Attracted campus-wide students to the LCA and modeling courses.
- Co-taught the following professional shortcourses on USEtox and LCA, 2011 ISES conference in Baltimore, 2009 SETAC-Europe conference in Goteborg, 2009 InLCA conference in Boston, 2008 SETAC-Europe symposium in Warsaw, 2007 SETAC-North America symposium, Milwaukee, 2006 Short course on Application of Multimedia Models for Identification of Persistent Organic Pollutants, at the OECD workshop in Ottawa.

Mentoring Doctoral and Master's Students

Chaired, co-chaired or member in multiple doctoral committees, both within EHS and for students elsewhere on campus or abroad. Mentoring of 4 PhD students that belong to the iMod lab, supporting another 4 PhD students from University of Michigan, and have supported 7 PhD students and 4 Master students from other international institutions.

Stimulating and guiding young researchers at the start of their career is one of my most rewarding activities. My students have all gone on to find immediate employment in industry or academy, and it has been a pleasure this year to have three mentees appointed to faculty positions.

Academic leadership and responsibilities

Since my arrival at the University of Michigan in 2005, my priority in contributing to the service mission of the Department has been to help attract outstanding students, shape the curriculum and make departmental research activities and results widely available through the following services and leadership roles:

- Chair of the Doctoral–Academic EHS Committee (2011-present), Chair of the EHS Admission Committee (2009), Chair, EHS Web Committee (2007-2009), Member of the EHS Curriculum/Professional Committee, representative of the risk science subplan (2007-2009), On Job On Campus EHS leader (2007-2008), Member of the EHS Doctoral Committee (2005-2007), Associate Director, University of Michigan Risk Science Center (2005-2010), Member of the School of Public Health Computing Services Advisory Committee (2008-2009).
- Other academic leadership: Exposure Science Expert Sub-Team - International Life Sciences Institute (ILSI) Risk Assessment in the 21st Century (2010-present). UNEP (United Nation Environmental Programme)/SETAC (Society of Environmental Toxicology and Chemistry) Life Cycle Initiative: Program Manager for Life Cycle Impact Assessment until 2008, managing the efforts of 80 scientists worldwide; co-chair of USEtox task force since 2006 for the modeling of comparative toxicity (2005-Present). Executive Committee of the Graham Environmental Sustainability Institute (2007-2010). External Advisory Board of the Harvard Superfund Program and Tar Creek Project (2006-2008). CIRAIG, Ecole Polytechnique of Montreal: faculty affiliate (2005-present).

2006 - present Co-founder and Chair of Scientific Board of the start-up company "Quantis" (Formely Ecointesys Life Cycle System): Development and implementation of Life Cycle Tools. Development of the Quantis software to assess the overall Life Cycle of a company. Quality control activity. After 4 years activity, Quantis has offices in Switzerland (Lausanne), France (Paris), USA (Boston) and Canada (Montreal) and is reaching a $4,000,000 turnover in 2010.

1999-2005 As Assistant Professor at **the EPF-Lausanne**:

Set up of the "industrial ecology and life cycle systems" research team, composed of 10 Equivalent full-time scientists funded on external projects, developing new methods to apprehend Life Cycle Systems and model the fate and impacts of indoor and outdoor toxic substances, with a yearly budget of about $500,000. Achievements include:

Basic research on impact and risk modeling

- Developed Impact 2002, a spatial multimedia model for Europe, predicting comparative chemical risks on human health and ecosystems of indoor and outdoor air emissions. Established a full matrix approach to describe the source to impact chain.
- Analyzed the spatial variations in toxic impacts over Europe and the importance of complex coupling between water, air, soil and plants media. Defined and calculated population intake fraction for 700 toxics in collaboration with the **Lawrence Berkeley National Laboratory** (as an invited scientist in 1999 and 2004). Developed new framework for indoor air intake fraction.
- Established the AMI method (Assessment of Mean Impact) to assess mean impacts of chemicals on aquatic ecosystems based on HC50, also applicable to ionizing radiation.
- Established the "ED10 approach" (the ED10 is the dose which induces a 10% added risk for humans) in collaboration with the Harvard School of Public Health to compare the life cycle effects of 1000 carcinogens and non-carcinogens on human health, using Disability Adjusted Life Years.
- Created Impact 2002+, a Life Cycle Impact Assessment (LCIA) method implementing a combined midpoint/damage approach, linking 1500 life cycle inventory results (elementary flows and other interventions) via 14 midpoint categories to four damage categories; designed the UNEP-SETAC framework for LCIA.

Modeling and management of Life Cycle Systems

- Extended product LCA to the Life Cycle Assessment of an entire company using a matrix based approach (Green-e); applications included pharmaceutical, bank, transportation, micro-technics and service companies.
- Explored quantitative environmental tools to support ‘green’ investments and corporate environmental assessment.
- Identified key factors for sustainable consumption and developed demonstration scenarios for sustainable consumption in Switzerland.
- Operationalized Hybrid LCA combining process LCA with Input-Output LCA to determine impacts and benefits of Internet and of telecommunication systems.
- Developed a framework and tool to assess social, economic and environmental performances for European regions, including Life Cycle impacts and costing together with social impacts.
- Optimized and assessed biofibers for biomaterials compared to conventional polymers or use of biomass for biofuels, heating, or chemicals in collaboration with Polymers laboratory.
- Identified the Life Cycle Impact of decontaminating sites scenarios, rainwater recuperation in buildings, 12 sludge treatments and low energy buildings scenarios.
- Participated in the development of the ecoinvent 2000 database.

Teaching

- Supervised 43 master theses and 9 PhD theses
- Set up the minor on industrial ecology and pollution management, within the Curriculum on environmental engineering
- Set up of a distance learning course in LCA between EPFL and Harvard School of Public Health.
- Taught ≅200 hours/year of interactive teaching in LCA, Risk Assessment of chemicals, ecodesign, sustainable consumption, and life cycle approaches for companies. Attracted 80 students (per year) in an optional course on ecodesign offered to all EPFL sections.
- Conducted "learning by doing" interdisciplinary projects, as an efficient way to make the synthesis between environmental and technological performances. Integrated teaching on design for environment for 'non environmental' undergraduate engineers (e.g. mechanical, electrical, material or chemical engineers).
- Set up Short courses on life cycle assessment and risk modeling at the MIT 1997, for the Perstorp Regeno company, Malmö, Sweden, 1997, at the Korean Advanced Institute of S&T (KAIST) 1999, at the SETAC European congress in Brighton 2000, Madrid 2001, Vienna 2002, Hamburg 2003 and Prague, 2004; invited regularly for courses at Geneva Univ., Fribourg Univ. and ETH Zürich.

Academic leadership and responsibilities

- Member of the peer review panel for a laboratory evaluation at INSAIA (Nancy)
- Swiss scientific advisory committee of the "Alliance for Global Sustainability" (joint research alliance between the MIT, Tokyo University and ETH Zürich & Lausanne).
- Member of the scientific supervising committee of CREM (Energy and Municipalities Research Centre, Martigny, CH).
- Member of the board of the Ecoinvent Swiss Life Cycle Centre for Inventory.

1997 As visiting scholar at the **MIT, Cambridge, USA**:

- Started research project "Materials loop closing" with the Materials Systems Laboratory and the Center for Technology, Policy & Industrial Development.

1993-1998 As advanced researcher at the **EPF-Lausanne**:

- Pioneered development of factors to include pollutant fate in life cycle toxicity assessment. Designed agreed-upon framework to analyse present and future methods for toxicity assessment (within the European Society for Environmental Toxicology and Chemistry).
- Launched comparison of fate and exposure modeling for Life cycle toxicity assessment: Critical Surface-Time (EPFL), CalTOX (UC-Berkeley) and EUSES (Pré consultant-NL).
- Initiated European concerted action on harmonization of life cycle assessment in agriculture.

As scientific advisor of the EPFL President (part time): Scientific analyses for the EPFL Presidency, developed decision-aid tools, strategic planning, organization of and participation to the two Swiss-Korean Round tables on Science & Technology.

1991 - 1993 As project leader at the **Swiss Federal Research Station, Taenikon**:

- Initiated Swiss research activities on life cycle assessment in agriculture
- Designed agriculture scenarios for the national action programme "ENERGY 2000".

1989 - 1991 As researcher at the **Silsoe Research Institute, Great Britain**:

- Developed the HORTITRANS model and software (dynamic model for the calculation and optimization of climate and humidity in greenhouses).

1989 As researcher for the **French Agency for Energy Management**:

- Realized method to analyze economic investments for energy savings in greenhouses.

1986 -1989 As professor at the Geneva Engineers' School:

- Set up new laboratory and course in building physics at the Geneva Engineers' School, in parallel with PhD research.

1983 - 1989 As researcher at the **Solar Energy Laboratory of the EPF-Lausanne**:

- Developed and commercialized the HORTICERN software (calculation of energy consumption in greenhouses) in 10 countries in English, French, German and Italian.
- Developed model to predict energy consumption in greenhouses: same accuracy as the best complex dynamic models, calculation time and data reduced by a factor 10'000.
- Assistantship: responsible for exercises in the physics course for architectural EPFL students, including the training of student-assistants.

Memberships and Offices in Professional Societies

Member of the Society of Environmental Toxicology and Chemistry (SETAC)

Member of the International Society for Exposure Science (ISES)

Member of the International Society for Industrial Ecology (ISIE)

Member of the Society for Risk Analysis (SRA)

Member of the Swiss Society for Engineers and Architects (SIA)

Editorship and review work

In addition to the roles listed above, I was a co-editor (until 2006) of the Journal of Industrial Ecology; I have served as a peer reviewer for several top journals including Science, Environmental Health Perspectives, Environmental Science and Technology, Atmospheric Environment, Chemosphere, Science of the Total Environment, Environmental Toxicology and Chemistry, and International Journal of LCA; and I have been invited to serve on multiple conference scientific committees and session chairing.

3. Publications list January 2012

3.1. Peer reviewed publications

1. Demond A, Franzblau A, Garabrant DH, JiangX, Adriaens P, Chen Q, Gillespie B, Hao W, Hong B, **Jolliet O** and Lepkowski J, 2012. Human Exposure to Dioxins from Soil: Field Studies. Environmental Science and Technology, on-line first December 2011 (http://dx.doi.org/10.1021/es2022363).

2. Helmes R, Huijbregts MAJ, Henderson AD, **Jolliet O**, 2012. Spatially explicit fate factors of freshwater phosphorous emissions at the global scale. Submitted to Int J of LCA, Accepted, in press, December 2011.

3. White-Newsome JL, Sanchez BN, **Jolliet, O**, Zhang Z, Parker EA, Dvonch JT, O'Neill MS, 2012. Climate change and health: Indoor heat exposure in vulnerable populations. Environmental Research, On-line first (http://dx.doi.org/10.1016/j.envres.2011.10.008).

4. Imbeault-Tétreault H, **Jolliet O**, Deschenes L, Rosenbaum RK, 2012. Analytical propagation of uncertainty in LCA using matrix formulation. Journal of Industrial Ecology, accepted.

5. Hauschild MZ, **Jolliet O**, Huijbregts M, 2011. A bright future for addressing chemical emissions in life cycle assessment. Int J Life Cycle Assess, 16 (8) 697–700 (http://dx.doi.org/10.1007/s11367-011-0320-8).

6. Fantke P, Charles R, Alencastro LF, Friedrich R, **Jolliet O**, 2011. Plant uptake of pesticides and human health: dynamic modeling of residues in wheat and ingestion intake. Chemosphere, 85 1639–1647 (http://dx.doi.org/10.1016/j.chemosphere.2011.08.030).

7. Fantke P, Juraske R, Assumpcio A, Friedrich R, **Jolliet O**, 2011. Dynamic multi-crop model to characterize impacts of pesticides in food. Environmental Science and Technology, 45, (20) 8842-8849 (http://pubs.acs.org/doi/abs/10.1021/es201989d).

8. Franco A, Hauschild M, **Jolliet O**, Trapp S, 2011. Atmospheric fate of non-volatile and ionizable compounds. Chemosphere, on-line first, (http://dx.doi.org/10.1016/j.chemosphere.2011.07.056).

9. Rosenbaum R.K., Huijbregts M, Henderson A, Margni M, McKone T.E., van de Meent D, Hauschild MZ, Shaked S., Li D.S, Gold L.S, **Jolliet O**, 2011. USEtox human exposure and toxicity factors for comparative assessment of toxic emissions in Life Cycle Analysis: Sensitivity to key chemical properties. Int J Life Cycle Assess, 16 (8) 710-727 (http://dx.doi.org/10.1007/s11367-011-0316-4).

10. Humbert S, Marshall JD, Shaked S, Spadaro J, Nishioka Y, Preiss Ph, McKone TE, Horvath A and **Jolliet O**, 2011. Intake fractions for particulate matter: Recommendations for life cycle assessment. Environmental Science and Technology, 45 (11) 4808-4816 ((http://dx.doi.org/10.1021/es103563z).

11. Henderson A, Hauschild M, Van de Meent D, Huijbregts MAJ, Larsen HF, Margni M, McKone TE, Payet J, Rosenbaum RK, **Jolliet O**, 2011. USEtox fate and ecotoxicity factors for comparative assessment of toxic emissions in Life Cycle Assessment: Sensitivity to key chemical properties. Int J Life Cycle Assess, 16 (8) 701-709 (http://dx.doi.org/10.1007/s11367-011-0294-6).

12. Wenger Y, Schneider R.J., Reddy R, Kopelman R, **Jolliet O** and Philbert M.A, 2011. Tissue Distribution and Pharmacokinetics of Stable Polyacrylamide Nanoparticles Following Intravenous Injection in the Rat. Toxicology and Applied Pharmacology, 251 (3) 181-190. (http://dx.doi.org/10.1016/j.taap.2010.11.017).

13. Kaenzig J, Friot D, Saade M, Margni M and **Jolliet O**, 2011. Using life cycle approaches to enhance the value of corporate environmental disclosures, 2011. Business Strategy and the Environment, 20 (1), pp. 38-54. (http://dx.doi.org/10.1002/bse.667).

14. Emond C, Rolando C, Hirano S, Schuster F, Jolliet O, Maghni K, Meyer-Plath A, Hallé S, Vandelac L, Sentein C, Torkaski C, 2011.The International Team in NanosafeTy (TITNT): A Multidisciplinary group for an improvement of Nanorisk Assessment and Management. Journal of Physics: Conference Series, 304 (1), art. no. 012086 (http://dx.doi.org/1010.1088/1742-6596/304/1/012086).

15. Hong J, Shaked S, Rosenbaum R and **Jolliet O**, 2010. Analytical Uncertainty Propagation in Life Cycle Inventory and Impact Assessment: Application to an Automobile Front Panel. Int J of LCA, 15 (5) 499-510. (http://dx.doi.org/10.1007/s11367-010-0175-4).

16. Franzblau A, Hedgeman E, **Jolliet O**, Knutson K, Towey T, Chen Q, Hong B, Adriaens P, Demond A, Garabrant D, Gillespie B, Lepkowski J, 2010. The university of Michigan dioxin exposure study, A follow-up investigation of a case with high serum concentration of 3,2,4,7,8 Pentachlorodibenzofuran. Environmental Health Perspective, 118 (9), 1313-1317 (http://dx.doi.org/10.1289/ehp.0901723).

17. Diamond M L, Gandhi N, **Jolliet O**, et al., 2010. The clearwater consensus: the estimation of metal hazard in freshwater. Int J. of LCA 15 (2), 143-147. (http://dx.doi.org/10.1007/s11367-009-0140-2).

18. **Jolliet O** and Small JM, 2010. Integrated Environmental Assessment, Part IV: Human Health Risk Assessment. Journal of Industrial Ecology 14 (2), 188-191. (http://dx.doi.org/ 10.1111/j.1530-9290.2010.00240.x).

19. Rosenbaum R, McKone T and **Jolliet O**, 2009. CKow – A Dynamic Model for Chemical Transfer to Meat and Milk. Environmental Science and Technology 43 (21), 8191–8198. (http://dx.doi.org/10.1021/es803644z).

20. Schwab S, Castella P, Blanc I, Gomez M, Ecabert B, Wakeman M, Manson JA, Emery D, Hong J, **Jolliet O**, 2009. Integrating life cycle costs and environmental impacts of composite rail car-bodies for a Korean train. Int J LCA, 14 (5), 429 - 442 (http://dx.doi.org/10.1007/s11367-009-0096-2).

21. Humbert S, Loerincik Y, Rossi V, Margni M and **Jolliet O**, 2009. Life cycle assessment of spray dried soluble coffee and comparison with alternatives (drip filter and capsule espresso). Journal Cleaner Production, 17 (2009) 1351–1358 (http://dx.doi.org/10.1016/j.jclepro.2009.04.011).

22. Milbrath M O, Wenger Y, Chang C-W, Emond C, Garabrant D, Gillespie BW and **Jolliet O**, 2009. Apparent half-lives of dioxins, furans, and PCBs as a function of age, body fat, smoking status, and breastfeeding. EHP 117 (3) 417–425

(http://dx.doi.org/10.1289/ehp.11781).

23. Humbert S, Manneh R, Shaked S, Horvath A, Deschênes L, **Jolliet O** and Margni M, 2009. Assessing regional intake fractions and human damage factors in North America. Science of the Total Environment (STOTEN), 407, 4812–4820 (http://dx.doi.org/10.1016/j.scitotenv.2009.05.024).

24. Steinberger J, Friot D, **Jolliet O**, Erkman S, 2009. A spatially-explicit Life-Cycle Inventory of the global textile chain. Int J LCA, 14 (5) p. 443-455. (http://dx.doi.org/10.1007/s11367-009-0078-4).

25. Humbert S, Rossi V, Margni M, **Jolliet O** and Loerincik Y, 2009. Life cycle assessment of two baby food packaging alternatives: glass jars vs. plastic pots. Int J LCA, 14, 95–106 (http://dx.doi.org/10.1007/s11367-008-0052-6).

26. Hong J, Otaki M and **Jolliet O**, 2009. Environmental and economic life cycle assessment for sewage sludge treatment processes in Japan. Waste Management, Volume 29 (2), 696-703 (http://dx.doi.org/10.1016/j.wasman.2008.03.026).

27. Hauschild M, Huijbregts M, **Jolliet O**, Margni M, van de Meent D, Rosenbaum R, McKone Th., 2009. Achieving Consensus on the Assessment of Toxicity in LCA. Environmental Managers - Air & Waste Management Association. EM Dec., 2-6.

28. Hauschild M, Huijbregts M, **Jolliet O**, Margni M, MacLeod M, van de Meent D, Rosenbaum R and McKone T, 2008. Building a model based on scientific consensus for Life Cycle Impact: Assessment of Chemicals: the Search for Harmony and Parsimony. Environmental Science &Technology, 42(19), 7032-7036. (http://dx.doi.org/10.1021/es703145t).

29. Franzblau A, Hedgeman E, Chen Q, Lee S-Y, Adriaens P, Demond A, Garabrant D, Gillespie B, Hong B, **Jolliet O**, Lepkowski J, Luksemburg W, Maier M and Wenger Y, 2008. Human Exposure to Dioxins from Clay: A Case Report. Environmental Health Perspectives. Vol. 116: 238-242. (http://dx.doi.org/10.1289/ehp.10594).

30. Rosenbaum R, Bachmann T, Huijbregts M, **Jolliet O**, Juraske R, Köhler A, Larsen H, MacLeod M, Margni M, McKone T, Payet J, Schuhmacher M, van de Meent D and Hauschild M, 2008. USEtox—The UNEP-SETAC toxicity model: recommended characterisation factors for human toxicity and freshwater ecotoxicity in Life Cycle Impact Assessment. Int J LCA, 13 (7) 532-546. (http://dx.doi.org/10.1007/s11367-008-0038-4).

31. Blanc I, Friot D, Margni M and **Jolliet O**, 2008. Towards a new Sustainable Environmental Index based on a DALY weighting approach. Sustainable Development (Wiley), Vol 16(4), 251-260. (http://dx.doi.org/10.1002/sd.376).

32. Posch M, Seppälä J, Hettelingh J-P, Johansson M, Margni M and **Jolliet O**, 2008. The role of atmospheric dispersion models and ecosystem sensitivity in the determination of characterisation factors for acidifying and eutrophying emissions in LCIA. Int J Life Cycle Assess (2008) 13:477–486 (http://dx.doi.org/10.1007/s11367-008-0025-9).

33. Meyer-Aurich A, Venus J and **Jolliet O**, 2008. Ökonomische und umweltrelevante Potenziale der Herstellung und Nutzung von Polymilchsäure aus nachwachsenden Rohstoffen als Ersatz für Kunststoffe aus petrochemischer Herstellung. Berichte über Landwirtschaft. Vol 86 (1), 142-161.

34. Kaenzig J and **Jolliet O**, 2007. Prioritizing sustainable consumption patterns. International Journal on Innovation and Sustainable Development, 2(2): 140–154. (http://dx.doi.org/10.1504/IJISD.2007.016930).

35. Rosenbaum R, Margni M and **Jolliet O**, 2007. A flexible matrix algebra framework

for the multimedia multipathway modeling of emission to impacts. Environment international, Vol. 33, 5, 624-634. (http://dx.doi.org/10.1016/j.envint.2007.01.004).

36. Scharnhorst W, Ludwig C, Wochele J, **Jolliet O**, 2007. Heavy metal partitioning from electronic scrap during thermal End-of-Life treatment. Science of the Total Environment, 373 (2-3), pp. 576-584.

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4. Current Grant Support

Jolliet-PI 2/1/10-12/31/12

Dairy Management Inc. (DMI) Total 620,000 (Direct $437,378 +12,862)

US Fluid Milk beyond Carbon LCA Study

This study aims to carry out a full LCA of fluid milk, with emphasis environmental impacts of water consumption and land, use, toxic impact on human health and ecosystems as well as a screening of the associated Life Cycle Costs. It includes the development of a spatially differentiated Life Cycle Impact Assessment.

Jolliet-PI 8/15/10-12/31/11

Dairy Management Inc. (DMI) Total $55,000 (Direct $37,260)

Dairy FarmSmart and Walton project: Phosphate eutrophication at local Scale and integration into the farm Life Cycle Impact Assessment

This project aims to create a 'dashboard' tool that allows a farmer to assess, measure and mitigate environmental impacts. based upon farm-specific variables including climate, air quality, soil, land and watershed impacts. The focus of the UoM effort will be on the implementation of the P-eutrophication model at local scale and on the integration of the direct local impact from the farm within the overall LCIA.

Jolliet-PI 3/1/11-2/28/2014

US-EPA Total $600,00 (Direct $435,442)

Environmental Transformation and Biological Fate of Fresh and Aged Cerium Oxide Nanoparticles

The overall objective is to improve our understanding of environmental exposure-dose pathways of CeO2 Nanoparticles. Our Specific Aims are: (1) characterize environmental transformation and physicochemical properties of aged CeO2 NPs (2) determine the biological fate of freshly-combusted and aged CeO2 NPs and (3) develop and evaluate a Physiologically Based ToxicoKinetic (PBTK) model of CeO2 NPs.

Jolliet-PI 3/21/11-10/30/2013

American Chemistry Council Total 369,821 (Direct $277,002)

USEtox Prioritization Indices for Chemical Exposure from Consumer Products (USEtoxPI)

The overall objective is to create a novel, augmented model to derive exposure prioritization indices for chemical screening, building on multimedia fate, exposure, and physiological models. The result is the first model to span the continuum from product life-cycle to body burden, ensuring a consistent integration of exposure with EPA's ToxPi toxicity index.

Jolliet-PI 7/1/09-12/31/12

International Aluminum Institute Total $92,477 (Direct $70,419)

Improving the Life cycle Human Toxicity Assessment of Aluminium-based Products – Phase II

This study aims to characterize the human toxicity effects of aluminium-based products in order to improve the reliability of their life cycle impact assessment, with focus on B[a]P and other PAHs as well as arsenic and aluminium emissions to water.

Jolliet-PI 12/15/10-12/14/11

Sustainability Consortium Total $148,000 (Direct $135,780)

A Global Life Cycle Impact Assessment Framework & Method

This project aims 1) to create a consistent impact framework that synthesizes environmental and socioeconomic domains, 2) to expand and improve impact categories and to determine sets of characterization factors for all continents 3) to ensure that case studies demonstrate consistency across sectors and 4) to involve stakeholders